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AMERICAN

VETERINARY REVIEW

Edited and Published by

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AMERICAN VETERINARY REVIEW,

APRIL, 1888.

EDITORIAL.

The title page of our eleventh volume—error by the printer—our correction, and new title page—list of contributors to that volume—our thanks to those pioneers of American veterinary literature—efforts to render the REVIEW accessible to all—our future prospects—the REVIEW, born of the United States Veterinary Medical Association, has always paid its relative its respect—at times severe, but always just—the meetings in New York, Boston, Philadelphia and Baltimore—the last one probably the most useful and interesting of all—paper from Dr. Salmon on hog cholera—his claim—discovery of distinct diseases—European observation and discoveries coincide with the investigations made in America—Dr. Clement's handsome exhibition of specimens of pleuro-pneumonia lesions—their specific value at the various stages of the disease—paper on mediate contagion—Dr. Salmon's remarks—Prof. Law's answer to Dr. Gadsden—our suggestion on the subject seconded. Director Nocard's request—the fifth international veterinary congress to be held in September, 1889—the congress on tuberculosis to take place this year, in July—our confreres on this continent can become members and receive the publication of both by a small remittance to the treasurer of both. Two new veterinary journals, the *Ercolani* and the *Giornale di Veterinaire Militare.*

IN arranging the copy for the closing number of our eleventh volume, last month, we prepared a title page, together with a copious table of contents, for the benefit of such of our subscribers as might desire to preserve their numbers in a bound volume for easier reference to the subjects treated in the 570 pages through which we have communicated with our readers during the past twelve months. But through a misapprehension on the part of our printers, which it is unnecessary to explain here, the whole matter became wrongly arranged, and our design effectually miscarried. In order to rectify this accident, however, and remedy the harm, if any has been done, we furnish with the present number a title page of Volume XI, more according to our first design, with an accompanying list of the names of the friends whose contributions have made the REVIEW what it is and what it has been, and to whom, with many others, we shall continue to look to communicate interest and value to our pages in the future.

In recapitulating the names of these gentlemen, we are but doing them simple justice. Considering the sparseness in numbers of contributors to veterinary literature in the United States, thus far, we should render all the more honor to those who have been among the earliest to occupy the field, and we trust that it will be long before we shall miss their names from among those who honor the profession of their choice by plying their pens for its advancement.

In beginning the twelfth volume of our magazine, we are glad to be able to assure our readers of the past success of the REVIEW, and while we contemplate with pride the progress already achieved in the past, we look with confidence to the future for a still more enlarged and permanent success, with a corresponding capability for usefulness and promise of prosperity.

Amongst a variety of plans for the advancement of our interest which we have recently had in contemplation, and in order to effect the introduction of the REVIEW into every veterinary office in the country, we have been considering the question of a reduction in our subscription rates. Peculiar complications, however, aside from any volition of our own, have interposed to prevent our coming to any definite determination of the question. But we are hopeful that as the result of sundry inquiries which we have instituted, and to which we are awaiting satisfactory answers, we shall soon be able to solve the problem.

The birth of the REVIEW occurred at a meeting of the United States Veterinary Medical Association, and being thus brought into existence, it has been both a duty and a pleasure with us, in the first number of each volume, to offer a sort of token of respect to our putative parent, by recording the proceedings of the meetings which the Association has for twenty-four years been accustomed to hold semi-annually in various cities of the Union. In printing these records the REVIEW has in many instances been obliged to exercise some degree of severity of judgment in its criticisms upon the doings and sayings of its venerated parent, and perhaps it has at times been irreverently forgetful of the difference between the ages of the party criticised and the party criticising. But if at times severe, we have never forgotten to endeavor always to be just, and we cannot be greatly blamed if our animadversions, taking into consideration the shortcomings of some—many—of the meetings, have been what they were. We reported the facts as they were, not as we wished them to be.

But if we have freely judged such occurrences as, for example, a certain meeting at which some of the members assisted once in New York, we have with gratification unrepressed spoken approvingly when we could candidly do so, of a different kind of assemblage. We spoke in just terms of certain profitable and pleasant meetings in Boston—we expressed our pleasure while recording a recent meeting in Philadelphia, with its agreeable features—we make fully known our satisfaction in reporting the latest of the meetings of the Association in Baltimore, which by those who attended it has been unanimously pronounced the best and most fruitful in useful results of all that have hitherto been held, not overlooking the very attractive and enjoyable social features pertaining to it, prompted by the characteristic hospitality of a genial people.

The meeting was ostensibly that of the United States Veterinary Medical Association, but in fact the Association became at once a guest of the little nucleus of genuinely good and true veterinarians who compose the Maryland State Veterinary Association, and right heartily was the work of the committee of arrangements performed.

The meeting took place in the halls of the Medico-Chirurgical Society of Baltimore, and a large representation of the profession was present, with veterinarians from nearly every quarter of the land. The routine of general business was rapidly carried through, and after a magnificent lunch prepared by the State Society for its senior guest, the United States Association, the principal business of the meeting was taken in hand.

First on the list came a paper on hog cholera by Dr. Salmon, who improved the opportunity to confirm and establish his priority of claim as discoverer, in respect to the various forms of disease in swine which veterinarians have for years considered and contended to be a single lesion. Dr. S. also gave a statement of the adoption of similar views by the European, and lately the French pathologists, as the result of their observations of recent outbreaks of diseases among swine, more particularly at Marseilles, within a recent period.

Dr. Clement spoke on the subject of the pathological lesions of pleuro-pneumonia-contagiosa and of tuberculosis. He exhibited before the Association a large collection of specimens of various kinds, without doubt the most valuable and interesting exhibit ever submitted to the inspection of a veterinary meeting.

Another of the important incidents of the meeting was the presentation of a second paper by Dr. Salmon, on a new subject. In a recent number of the REVIEW we printed a communication from Dr. Gadsden on the subject of "mediate contagion," and we at the same time suggested the propriety of such a discussion of the points presented by Dr. G., by such of our correspondents as have sufficiently considered the matter, as would tend to elicit the merits of the case and confirm or refute the newly advanced theory. Dr. Salmon's paper contained this answer to Dr. Gadsden, and to its publication in our present number* we add Dr. Law's contribution on the same subject. We are glad to see our suggestion so amply seconded, and trust that these papers will be read with attention and profit.

WE have received from Director Nocard, the General Secretary of the Organizing Committee, the circular of the Fifth National Veterinary Congress, called to meet in Paris during the month of September, 1889.

It is with pleasure that we comply with the request of our esteemed friend and colleague by calling the attention of American veterinarians to the event, and we hope that our American colleagues will not remain silent to the call issued by their professional brethren on the other side of the Atlantic. The opportunity is a grand one, the work which will be done and the subjects to be discussed will be of great interest, and the other incidents which are intended to supplement the main event, will, we are sure, fully repay the cost and trouble of a trip to France. If our brethren individually are unable to go, delegates should be commissioned at the expense of our organized institutions, and the profession at large should also add their endorsement, in order to secure the publications which may issue from the Congress by the remittance of the small amount indicated in the circular, viz.: $2.00.

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*After waiting for the Secretary of the Association for several days after the meeting, we are obliged to postpone the publication of the paper, as the Secretary has failed to send it.

But before the sessions of this French Congress take place another will have already been held, which has been called to convene in the month of July of the present year. This has been inaugurated for the discussion of the subject of human and animal tuberculosis. Four principal questions will come before this body, 1. The danger that attends the use of the meat and milk of tuberculous animals, with the proper means of their prevention. 2. Human races, species of animals, and organic media considered from the point of view of their aptitude to contract tuberculosis. 3. Methods of introduction and propagation of tuberculosis virus in the organism, and prophylactic measures. 4. Initiative diagnosis of tuberculosis in man.

The meeting wtll continue six days, and its proceedings are to be published. Every veterinarian can be a member of this Congress, and will be entitled to receive the printed transactions on payment of $2.00 to Mr. Masson, 120 Boulevard St. Germain, Paris.

AMONG the novelties of interest to the profession we are pleased to notice the opening of a new veterinary school in Australia, the "Melbourne Veterinary College," a reference to which will be found on another page.* Mention is also made of the establishment of two new veterinary journals in Italy, one the *L'Ercolani*, to be published at the school of Modena, and the other, the *Giornale di Veterinaria Militare*, published at Udine. To both of these new periodicals we offer our best wishes, and in respect to the new veterinary school, we know that with the names that appear in the announcement it has issued, its success may be confidently predicted.

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*Deferred to May issue.

ORIGINAL ARTICLES.

HOG CHOLERA.

By D. E. Salmon, D.V.M., Chief of the Bureau of Animal Industry.

(A Paper read before the United States Veterinary Medical Association.)

Until very recently the literature of hog diseases was very confusing, and not less so in Europe than in America. In the period from 1880 to 1885 the French came to regard all epizootic swine diseases as *rouget.* The Germans at the same time were directing their attention almost entirely to an identical disease in their country which they described under the name of *rothlauf.* Each of these words is synonymous with our erysipelas and was evidently used to designate this disease because of the predominance of the skin lesions. In this country the prevailing hog diseases have been referred to under the name of "hog cholera," a term which also indicates the chief organs affected, which with this disease are those composing the intestinal tract.

Early in 1886 I published a series of articles in which I demonstrated that hog cholera was a distinct and very different disease from *rouget* and *rothlauf.* This opinion was based not only upon the symptoms and course of the disease, but upon the lesions found upon post-mortem examination and the microbe associated with them. This microbe was discovered in the laboratory of the Bureau of Animal Industry in 1885.

About the time these articles were written Schütz described a disease in Germany under the name of *schweineseuche*, which differed from both *rothlauf* and hog cholera. It was a contagious disease and the prominent lesions were found in the lungs. Klein had previously described (1884) under the name of pneumo-enteritis, a disease somewhat similar in lesions to our hog cholera. Too much stress, however, was apparently laid upon the lung lesions and the germ was not described with sufficient detail to admit of identification.

The bacterium of hog cholera, as studied in our laboratory, is found chiefly in pairs, appearing as elongated ovals from $1\frac{2}{10}$ to $1\frac{5}{10}$ micromillimeters in width. Occasionally longer elements are observed reaching $1\frac{8}{10}$ micromillimeters in length, and even longer under certain conditions. In liquid media the bacterium is motile and its movements resemble very closely *bacterium termo*. That the bacterium which we have studied is not *bacterium termo* is shown by the fact that it does not liquify gelatine and that there is not the slightest putrefactive odor emitted from the culture containing it, and also by its pathogenic effects. This germ may be stained with an aqueous solution of methyl violet and various other aniline stains. When colored with methyl violet, particularly when in coverglass preparations made from the organs of affected animals, the central portion is much paler than the periphery. A dark border extends entirely around the germ and although it may be thicker at the ends than at the sides it does not give that distinct appearance of polar staining that is seen in the germs of rabbit septicæmia. Like most other germs, the staining varies somewhat with its age and conditions, and its size varies also according to the medium in in which it is grown, and also to a certain extent when obtained from different outbreaks of the disease.

The most recent microbe described by Klein in connnection with pneumo-enteritis resembles considerably the germ which we have found in hog cholera. It is motile in liquid cultures and is described as from two to three micromillimeters long. It is also said to be spore-bearing and that pigeons are wholly insusceptible to it. The germ of our hog cholera does not produce spores, so far as our observation goes, and it is fatal to pigeons when inoculated in considerable doses.

In virulent outbreaks the percentage of mortality produced by this germ is very high. In a recent outbreak in the District of Columbia out of 139 animals of a herd, about one hundred perished within the brief space of two months. This is over 70%. Many of the animals died without previously evincing any noticable symptoms of the disease.

In many of these there was more or less ulceration in the large intestine, showing plainly that the animals may be very severely affected and be a source of infection for others for a considerable time without presenting any symptoms to indicate their condition. About one-third of the cases in this outbreak showed lesions of a hemorrhagic character. The most common was an infiltration of the cortical portion of the lymphatic glands with blood. Sometimes the entire gland on section, was found to be similarly affected. Accompanying this condition of the lymphatics is usually a very large spleen, its great size being due to engorgement with blood. Next in frequency were the hemorrhagic lesions of the serous membranes. These consisted of extravasations of various sizes. In about 10% of the animals the kidneys were hemorrhagic. As a rule in these hemorrhagic cases the mucous membrane of the stomach is deeply reddened and there is hemorrhage into the membrane and in rare cases on its surface. The mucous membrane of the large intestine was affected in about the same manner as that of the stomach. The membrane of the small intestine was usually normal. Our experience has been that the early cases in an outbreak are hemorrhagic and are succeeded by those with ulceration of the large intestines and cellular infiltration of the lymphatics.

Ulcers of the large intestine were found in 36 out of 49 cases, or about 75%. They vary from very slight to very severe and extensive lesions involving in a small number nearly the whole of the membrane of the cœcum and colon. In a few cases the lesion was not limited to the muccus membrane, but extended into the muscular wall, producing considerable local inflammation and thickening of the serous membrane. In rare cases necrosis and cellular infiltration had made the intestinal wall so friable that it broke when handled. In five cases the lower ilium was ulcerated, but the ulcers seemed to have no relation to Peyer's patches. The age of the ulcers cannot be determined, as the process of necrosis and ulceration seems to vary a great deal in rapidity. We have frequently found a combination of old ulcers with recent hemorrhagic lesions. These would appear to resemble the condition found in chronic pleuro-pneumonia, where we find a cyst and at the same time a fresh inflammation of the lung tissue. What conclusion is the pathologist to draw from this condition? Is it the result of an increase of virulence of the bacteria which have been preserved so that they are able to penetrate and multiply in the tissues which have previously resisted them, or is it simply the result of an extension of the bacteria, which have not increased in virulence but which have been limited to the affected part of an organ? The answer to these questions must have great influence on our views of the preservation of virus and the sudden appearance of virulent epizootics which apparently have their starting point in mild chronic cases.

Peritonitis, pleuritis and pericarditis are not uncommon complications usually accompanying old ulcers. These are possibly caused by septic bacteria gaining entrance through the ulcers. We have demonstrated that cocci closely resembling those of suppuration and various other microbes are usually found in the peritoneal cavities in chronic cases.

The lesions found in the lungs on post-mortem examination were either simple collapse or lobular broncho-pneumonia which apparently followed it. In about fifteen per cent. of the animals examined, one of the smaller ventral lobes was airless throughout and moderately enlarged. Viewed from the surface the diseased lobe is bright red, dotted with minute pale, grayish and yellow points of a diffused, hazy outline, each not more than one millimeter in diameter. They are usually ranged in groups of four and represent the ultimate air cells filled with cellular exudate. The larger bronchi are also occluded. Microscopic sections reveal a broncho-pneumonia. The process seems to be accompanied with very little inflammation. The desquamation and proliferation go on in the alveoli and smallest air tubes until they are occluded by the casts. Of the forty-nine animals of the herd mentioned seventeen were found with collapse and eight with broncho-pneumonia. In this outbreak then, more than one-half of the animals had some defect of the lungs. It is to be remembered, however, that when healthy hogs are slaughtered, it is common to find more or less collapse of the same lobes as were found affected in these cases.

There is an idea among some investigators that the lung lesions of infectious pneumonia or swine-plague and the bowel lesions of hog cholera are produced by the same bacteria and, that the seat of the disease depends entirely upon the organ through which the germ is introduced into the body. To illustrate this matter we have injected the germs of hog cholera directly into the lung tissue, but we have not produced hepatization by such inoculations. Either the germ is diffused through the body, producing lesions of the spleen, lymphatics and intestines, or the animals recover. We have found, however, that in the lung lesions accompanying hog cholera there are a much greater number of germs than in the healthy portions of the lungs. It is evident, therefore, that in these collapsed portions the germs find favorable conditions for their multiplication, and it is not unlikely that the collapse developes into broncho-pneumonia because of their multiplication. To determine whether the microbe of contagious pneumonia was present in the affected portions of the lungs from animals affected with hog cholera, sixteen rabbits were inoculated from the same number of lungs. Of these, eight lungs were affected with simple collapse and eight with broncho-pneumonia. Of these sixteen rabbits, four survived and the remainder died of hog cholera. The germ of contagious pneumonia or swine-plague evidently was not present in any one of these cases.

When either cultures of this motile germ, or the spleen or intestines of hogs which have died of cholera, are fed to susceptible pigs, there is produced the most remarkable and extensive ulcerative lesions of the intestines. In the most severe cases there is complete necrosis of the mucous membrane of the cæcum and colon and often of the ilium, while in cases produced in the ordinary course of infection the small intestine is seldom if ever so affected.

The germ of hog cholera produces fatal effects when inoculated in mice, rabbits, guinea-pigs, pigeons and pigs.

In July, 1886, we recognized a different and distinct disease of swine in which the most prominent lesions were found in the lungs. This affection appears to begin as a broncho-pneumonia, but this extends—the lung tissue becomes completely hepatized, then caseous. The inflammation also extends to the pleura, and sometimes causes it to become attached to the thoracic walls. Sometimes cavities are found between the adherent pulmonary and costal pleura, which contain a yellowish, turbid liquid; and frequently the diaphragm is firmly attached to the principal lobe. The parts of the lung first attacked become converted into homogeneous greenish or yellowish white masses, sharply defined from the surrounding tissue, and caseous in nature. This lesion is generally limited to a few lobules, but in some cases the whole lobe is involved.

Generally there are no intestinal lesions, but sometimes these are present, and on superficial examination might easily be confounded with hog cholera ulcers, particularly if the difference between the two had never previously been recognized. Doubtless this superficial resemblance in the intestinal changes seen in the two diseases may account for peculiarities in the descriptions of swine-plague by some authors which cannot well be explained in any other way.

The intestinal lesion in swine-plague is a yellowish croupous exudate, attached to the mucous surface in irregular masses varying greatly in size. This exudate may be easily detached, when the mucous membrane beneath it is found to be pale and slightly depressed. At a later stage, in severe cases of the disease, when the inflammation has a diphtheritic rather than a croupous character, the necrosed mucosa sloughs off, leaving a superficial erosion or a shallow ulceration.

This malady, so distinct in its lesions, is associated with and undoubtedly caused by a microbe which differs radically from that found in hog cholera. When stained by an aqueous solution of methyl violet or an alkaline solution of methyline blue the two extremities of the longer axis are deeply stained, while between these colored masses there is a transverse band without any color, bounded on the sides by a very faint line. These microbes so stained are oval and 1 to 1.2 micromillimeters in length by 0.6 to 0.8 of a micromillimeter in breadth. When grown in liquid cultures and examined fresh, instead of an oval it presents the appearance of a double micrococcus, that is of two spheres united at their edges. It has no motion and is probably identical with the micrococcus described in my report for 1884, but which on account of pressure of other work and lack of assistance was imperfectly studied at that time.

This germ is fatal when inoculated in mice, rabbits, guinea-pigs and pigs, and occasionally so when given to fowls and pigeons in large doses.

Let us now compare these two maladies more carefully in order to bring out the points of difference.

Taking the germs first, we find that of hog cholera to be motile, while that of swine-plague never presents any evidence of motility. This difference is a very striking and radical one. The appearance after staining is almost equally marked, providing we examine stained coverglass preparations made from the organs of affected animals. In the one case we have a long oval element with a dark border and a pale center; in the other we have a short oval element, staining darkly at the extremities and with an unstained transverse band across the median portion.

The hog cholera germ grows actively on the cut surface of potatoes, while the other microbe refuses to grow at all in that condition.

The hog cholera germ resists drying for a long time and will grow after it has been kept dry for one or two months, but the swine-plague microbe dies in a very few days (three or four) after being dried.

The former multiplies in drinking water and remains alive for three or four months after being placed in it, while the latter does not multiply at all in such water and dies within two or three weeks.

Mice are killed by the hog cholera germ in from eight to sixteen days, by the swine plague in from two to six days.

Rabbits die from hog cholera inoculations in from six to nine days, but they only live from twenty hours to six days after inoculation with swine plague.

Fowls have resisted all our inoculations with the hog cholera microbes; the swine plague germ kills them when inoculated in large doses.

The hog cholera microbe constantly produces in mice and rabbits enlargement of the spleen and numerous foci of coagulation necrosis in the liver; the swine plague germ never produces these lesions.

If cultures of the hog cholera bacteria are fed to pigs which have been kept without food for a day, they produce the most extensive necrosis of the mucous membrane of the large intestine and often considerable ulceration of the ilium, invariably causing fatal results. Cultures of the swine plague germ may be fed under exactly the same conditions without producing the least effect.

The hog cholera germ inoculated directly into the lung tissue produces no hepatization or marked lesion of any kind, but is followed by the development of a hemorrhagic or ulcerative case of hog cholera. The swine plague germ similarly inoculated produces extensive and violent inflammation at the point where it is deposited.

These differences in the germs are plain and unmistakable, and the lesions found in the two diseases are not less distinct.

Swine plague is a disease in which the principal lesions are found in the lungs; in hog cholera it is the intestines, the lymphatic glands, and the spleen which are most conspicuously affected.

In swine plague the alveoli and small bronchi are plugged with cellular masses, the pleura is thickened and may be adherent, the lung tissue may become necrosed and caseated. When the lungs are affected in hog cholera the lesion is generally of a hermorrhagic character, the tissne soft, spongy, and the alveoli are full of air.

Schütz found no intestinal lesions in the few cases of swine plague which he has examined. In a large proportion of cases we have found a croupous exudation. Occasionally the mucous membrane is secondarily necrosed, in other words, diphtheritic. By the sloughing of the superficially necrosed membrane an excavated ulceration is formed. In hog cholera the ulceration seems to be produced primarily by a necrosis of the mucosa, due to the direct effect of the bacterial poison. This necrotic tendency is well shown in the liver of mice, rabbits and guinea-pigs. There is no cropous deposit seen at any time. The injured mucosa may become extensively infiltrated with cells, often forming masses of embryonal tissue which, pushing upward from the submucosa by continued multiplication, furnish the old ulcer with its projecting button-like slough.

We have here two diseases, therefore, clearly defined and produced by entirely different organisms. But they are not always uncomplicated, since we occasionally find both of them in the same herd at the same time. The germ of swine-plague seems to be a widely distributed organism and nearly always has pathogenic properties, though its virulence is not always sufficient to enable it to destroy swine. That is, in all but its pathogenic qualities it is identical with the germ of rabbit septicæmia; with that of fowl cholera; with that of the disease called by the Germans *wildseuche.* We have found a variety of this same germ frequently present in mucus from the nostrils of healthy pigs and possessing sufficient virulence to kill rabbits by inoculation.

The presumption from these facts is that this germ is widely distributed, that under certain conditions when the lungs are weakened by irritation and disease which may result from overcrowding, inhaling dust, or exposure to the inclemencies of the weather, it may invade the lung tissue, increase its pathogenic properties and in certain cases become a virulent communicable disease.

The hog cholera germ is so far as we know peculiar to that disease. It has not been described as present in the diseases of any other species of animals, except when these are produced by inoculation. In its general biology it has many features in common with the bacillus of typhoid fever of man.

Now what is the nature of hog cholera? Prof. Law and the writer have frequently referred to it as a contagious fever, but a recent author insists that it is not a contagious disease at all and that it is a strictly infectious disease. There is a good opportunity for hair splitting here, but let us not be beguiled by word-juggling when we have the facts before us. Hog cholera is a bacterial disease; it is communicable from animal to animal by inoculation; when a diseased animal is introduced into a herd the malady rapidly progresses until nearly every animal in the herd becomes affected; the virus may be and is carried into all parts of the country by diseased animals. With these facts before us can we say the malady is strictly infectious and that any one who speaks of it as contagious is entirely wrong? It seems to me that such an assertion is supremely ridiculous and shows a lamentable ignorance of modern classification of disease.

While writing this I have taken a few standard works from my shelves at a venture, and every one, including Ziegler's Lehrbuch der pathologischen Anatomie (4th ed.), Flügge's Die Mikroorganismen (2nd ed.), Putz Die Seuchen und Herde Krankheiten, and Roll's Thierseuchen, include all bacterial diseases under the general term of "Infectious diseases." Ziegler then divides infectious diseases into *miasmatic diseases*, *contagious* diseases and *miasmatic-contagious* diseases. Flügge divides the infectious diseases according to the nature of the parasites causing them into *contagious obligatory* parasites, *contagious facultative* parasites, and *non-contagious facultative* parasites.

It is not my intention to insist upon any classification in this connection. No student of pathology can be ignorant of the wide differences which exist between various standard authors. What I desire is to draw your attention from this never ending controversy as to the exact meaning which should be ascribed to the words infectious and contagious and to concentrate it upon the facts in reference to this particular disease.

The same author insists in the most positive terms that hog cholera is an extra-organismal infectious disease. In other words that the parasite is one the natural habitat of which is the soil, that the hog obtains it from the soil and not through contagion, and that once planted in the soil this microbe remains there and multiplies for an indefinite period. Where are the records of the experiments which demonstrate this proposition put forth in such emphatic terms? Have you seen them? I have not.

In the laboratory of the Bureau of Animal Industry we have plodded along for three years laboriously endeavoring by means of experiments to throw some light upon the biological characters of this microbe and the conditions under which it may be preserved. We have observed after many outbreaks that fields and pens have been safely used within three to six months after the disappearance of the disease. We have frequently observed the same fact in connection with infected pens at our experiment station in Washington. We have endeavored to be more precise than this, however, and have infected soil in various situations with the bacteria of this disease, and then inoculated rabbits from this soil at regular periods. In this way the gradual loss of virulence in the microbe can be easily determined. At first the rabbits die in from six to eight days after inoculation, but this period grows longer and longer until finally the rabbits live twenty days and then the germ is no longer able to kill them. In our experiments we have found that this microbe loses all pathogenic properties after it has been in the soil but a few days longer than two months.

The indication is, therefore, that the hog cholera germ is not one which preserves its existence indefinitely in the soil, or which can justly be considered an extra-organismal parasite. That it can multiply and live for a limited period in water and soil we have demonstrated, but in each case it soon loses its virulence and dies.

How then is this microbe preserved from season to season, as it plainly is in certain cases, even when the disease has apparently died out in the meantime. Prof. Brown of England has frequently expressed the opinion, with which we coincide, that chronic ulcerations of the intestine may exist in unsuspected animals and that these harbor and disseminate the microbe for an indefinite period. We find here, consequently, a condition somewhat analogous to what we find in contagious pleuro-pneumonia. The germ multiplies in the chronic lesion, for a time it appears to have but little virulence, and then suddenly and for reasons which are not well understood it is distributed as a most fatal contagion. Even the original host, which has carried it around with impunity for months, may suffer a fresh invasion and die from a hemorrhagic type of the disease.

If there are other means by which this germ is preserved during the considerable periods of time which elapse between outbreaks of this malady we have not yet succeeded in demonstrating them.

Hog cholera is, therefore, a strictly contagious disease. The virus as a rule appears to gain entrance to the body by way of the alimentary canal, and by means of soiled and infected food and water. It is possible that the respiratory passages also serve to admit the parasite. The theory taught by one of the early investigators of this malady, that a few germs wafted by the air might settle upon a slight abrasion of the skin and thus gain entrance to the body and produce fatal effects, is scarcely tenable in the light of recent experiments. We have found that hogs may be safely given from one-fourth to one-half of a cubic centimetre of virulent cultures by hypodermic injection. Each drop of such cultures contains about two millions of microbes, and hence from twelve to twenty-five millions of these germs may be placed beneath the skin without danger to the hog. By the side of these vast numbers, of what significance is the half dozen germs which according to this gentleman are borne by the breeze and dropped upon an abraded surface of the skin? I must confess that I am skeptical of the disease ever being produced in this manner.

I shall not go into the details of preventive measures in this paper. You are already familiar with the principles of sanitary science which are applicable to diseases of this class. What you are doubtless interested in is the new points which may have been brought out by our investigations.

The most interesting of these is our attempt to confer immunity by inoculation. We soon found that there was no indication for attenuating the virus for this purpose, because the strongest virus might be introduced hypodermically with impunity in considerable doses. Now as the stronger a virus is the higher degree of immunity it produces, you can see that there is every reason for using the fresh unattenuated cultures. But even these are not sufficient. We made many experiments and found that hogs might safely be inoculated with one-fourth to one-half cc. for the first dose and that the second dose might safely be increased to two and three cc. showing that some degree of immunity had been gained. These twice-inoculated animals, however, were still unable to withstand exposure in an infected pen, and could not be fed the virus without fatal results.

We have tested many disinfectants and have determined the exact strength in which they should be used and the period of time necessary to kill the germ. The most useful agent for disinfecting manure and soil is undoubtedly lime. This in the proportion of one-fourth to one-half of one per cent. is speedily fatal to this microbe. The fact that lime is of value as a fertilizer and that it is frequently used to the extent of fifty to seventy-five bushels per acre, which would be sufficient as a disinfectant, shows the value of this agent for freeing the soil and various organic accumulations about farms from the contagion of this disease.

Having referred to the main points of this destructive malady which have been elucidated by the experiments made under my direction, I shall conclude with a few opinions of European investigators in reference to points which have been contested.

You will remember that it has been asserted in the most emphatic terms that there is but one disease in this country which goes under the name of cholera, and that it is identical with the *schweineseuche* of Schütz. To settle this question I have sent to the leading investigators of Europe cultures of the germ of hog cholera, together with copies of my reports and asked for their opinions. I trust you will bear with me while I read what they have since written on the subject:

M. Nocard after receiving this culture says editorially in the *Recueil de Medecine Veterinaire* for Jan. 15, 1888, p. 8.,

"Recapitulating, we see that under the name of *Rouget*, *mal rouge*, erysipelas, etc., etc., there may be confounded *at least* three very different maladies:

"First. The *rouget*, properly speaking. Second. The hog cholera of the Americans, probably identical with the swine-fever or infectious pneumo-enteritis of the English, and without doubt also with the diptheritis of the pig recently observed in Sweden and in Denmark. Third. The infectious pneumonia, or *schweine seuche*, of the Germans, or swine plague of the Americans."

Dr. Rietsch of Marseilles, who has recently studied the outbreak of swine disease near that place, writes under date of Feb'y 15:

"The microbe which I send you is not the same as that you discovered in hog cholera. The hog bacterium grows at 20° more slowly than mine and at lower temperature there is reached a point where the hog microbe no longer grows, while our bacillus still forms very fine colonies.

"The gelatine colonies differ in appearance.

"Finally your hog microbe is more motile and a little smaller, it seems to me, in the same condition.

"The microbe of Marseilles differs from that of Schütz by its motility, that of Loffler-Schütz being non-motile. The disease of Marseilles seems also to differ from the *schweineseuche* by the absence of œdema at the point of inoculation, by slower progress of the disease, by the pathological phenomena being found in the intestine almost always, while Schütz observed almost nothing in the intestine and never mentioned ulceration."

In a subsequent paragraph he adds, that my hog cholera microbe certainly differs much more from those of septicæmia of rabbits, *schweineseuche* of Loeffler-Schütz, wildseuche of Kitt and fowl cholera of Perroncito and Pasteur than these germs differ from each other.

The germ discovered by M. Rietsch at Marseilles is very closely allied to our hog cholera microbe and probably differs no more from it than specimens of our germ differ when obtained from different outbreaks in this country.

Dr. Cornil, who is now a member of the French Senate and who certainly is one of the very highest authorities on micro-organisms in France, writes me under date of Feb. 10, 1888, as follows:

"We have had occasion to study, M. Chantemesse and I, the disease of swine that you described two years ago under the name of swine plague and in your last volume under the name of hog cholera. We have observed an epidemic in June last at Paris, and at the end of the year another epidemic at Marseilles. We have verified the accuracy of your description and we are about making experiments of vaccination."

I have one other letter to which I attach the very greatest importance, because it comes from the highest authority in the world on pathogenic bacteria. Under date of Feb. 23, 1888, Dr. Robert Koch writes:

"The culture of hog cholera bacteria sent to me came in good condition, and I directed Dr. Esmarch, one of the assistants in the Hygienic Institute, to make a few experiments with it. He was able to confirm all of the results obtained by you in inoculating and feeding mice and guinea-pigs. This micro-organism does not correspond with any of the species of pathogenic bacteria known here, particularly not with those found in swine diseases.

According to private communications, however, this organism seems to be identical with the one found in swine plague in England and Denmark. Yet I cannot come to any definite conclusion in the matter, as I have had no opportunity thus far to make a comparative investigation."

This letter effectually settles the question as to whether American hog cholera is identical with the German *schweineseuche.* As I have said before, no one who has studied the germs of fowl cholera, rabbit septicæmia and swine plague, could confound with them for a moment the germ of hog cholera. The differences are radical and irreconcilable, but it has been difficult to convince some of our professional friends of this fact.

To complete the chain of evidence I may add that Prof. John Lundgren of the Veterinary Institute of Stockholm, Sweden, has recently brought to my laboratory the germ of the disease as it exists in Sweden and he is now comparing it with the germs of our hog cholera. I may say now that these microbes are morphologically identical and that they differ in biological characters only to about the same extent as germs from different outbreaks in various sections of the United States are found to differ from each other. The lesions of the disease correspond to our hog cholera.

We may conclude, therefore, that the outbreaks of swine disease during the last year in Sweden, Denmark, and at Paris and Marseilles in France, were practically identical with our hog cholera, and that the German *schweineseuche* is an entirely different and distinct disease.

DESCRIPTION OF SOME SPECIMENS OF PLEURO-PNEUMONIA CONTAGIOSA.

Presented by A. W. Clements, V.S.

(Abstract of remarks at the semi-annual meeting of the United States Veterinary Medical Association at Baltimore, March 20, 1888.)

Mr. President and Gentlemen:—Pleuro-pneumonia contagiosa is generally defined to be a contagious or infectious disease, manifesting itself by certain characteristic lung lesions, and generally accompanied by a sero-fibrinous pleuritis; the bronchial lymphatic glands are enlarged and softer than normal. The first case to which I will call your attention is one of left-sided acute pneumonia; it involves nearly the whole of the left lung, which, as you will see, is greatly enlarged, weighing forty-five pounds, while the right lung, which is healthy, weighs but six pounds. Thus you will see that the diseased lung contains thirty-nine pounds of exudate. The pleura is covered with exudate over the affected lung, and there is also a very abundant exudate about the organs in the superior mediastinum, a complication to which I shall call your attention later on. On section, this lung presents the lesions characteristic of the disease. This is a very typical case, and one upon which nobody who had ever seen even a picture of a lung in this disease could possibly make a mistake. The lung is solid, the parenchyma is hepatized, and there are varying shades of color, from a reddish pink to a dark red, depending upon the amount of blood present. The parenchyma is at the same time very moist (œdematous), and the interlobular tissue is filled with a jelly-like exudate, opaque white in appearance. This varied color of the parenchyma, compared with the white opaque color of the interlobular exudate, gives rise to what is termed the marbling of the lung. Very soon fibrous connective tissue appears in place of the interlobular exudate, and also around the bronchous in the center of the lobule. This new growth of interlobular connective tissue takes place, beginning at the border of the lobule, so that between two lobules we have two narrow bands of connective tissue with the exudate still remaining between them. The connective tissue may continue to grow so as to entirely fill up the interlobular space, or, as is more commonly the case, this takes place in some parts while in others the two bands separate and we have beginning necrosis. This separation continues in a certain direction and finally incloses a varying number of lobules, sometimes only one. When the ring is completed a sequestrum is formed and what we call chronic pleuro-pneumonia is the result. The bronchi resist the necrotic process longest, so that it is common to see a necrosed mass connected by bronchi with the healthy lung-tissue. Finally the bronchi ulcerate through and are seen hanging from the wall of the cyst as fibrous prolongations; these bronchi are in the great majority of cases occluded, but in some cases a fine probe may be pushed through them. Finally these projections slough off, and their ends becomes covered by the connective tissue, which grows from the lung, surrounding the necrosed mass. Sometimes ulceration may take place in a bronchous at the border of the diseased portion before complete occlusion has taken place, and so establish direct communication between the contents of the cyst and the healthy lung. This is the only way in which there is bronchial communication with a pleuro-pneumonia cavity. A bronchous is often seen leading toward a cyst, but instead of penetrating the wall it passes to the side of it. The new formation of peri-bronchial connective tissue, together with the pressure of the walls of the cavity, serve to completely occlude the bronchi.

What causes the necrosis is hard to say. One would think that the plugging of the blood vessels leading to the part would be sufficient, but we see the same necrotic processes, on a very much smaller scale, in the bronchial glands. Perhaps the virus which causes the disease has the property of producing necrosis, and at the same time of plugging the blood vessels. As soon as sequestration is complete, disintegration of the necrosed mass takes place, and the cavity becomes filled with serum or, more commonly, with a purulent material, in which more or less of the sequestrum remains.

What I have said refers to typical pleuro-pneumonia. Unfortunately many cases which we are called upon to diagnose are by no means typical. For example, a herd of cows came to Baltimore from outside of the quarantine limits, from a region where pleuro-pneumonia was not supposed to exist. Soon after arrival two of them presented symptoms of acute contagious pleuro-pneumonia. One was slaughtered, and at the post-mortem the following lesions were found: double pleurisy, both lungs enlarged and solid on pressure. On section of the lungs the following appearances were noticed: there was interlobular exudation precisely like that seen in acute pleuro-pneumonia contagiosa, but it affected the greater portion of both lungs, and there was no hepatization of the parenchyma except in a very small area of one lung, and there the consolidation was of the broncho-pneumonia type. When number two was slaughtered, much the same appearances were noticed, but in this case only one lung was affected, and there were necrotic cavities in the interlobular connective tissue. The parenchyma was not consolidated.

Next comes a very interesting series of cases in which were scattered foci of consolidation throughout the lung. On section, these solid areas presented typical pleuro-pneumonia cysts in the areas, large enough to be seen easily with the naked eye; these areas varied in size from two or three lobules to a single lobule; and from a single lobule down to foci the size of the head of a pin, many of which could be seen in a single lobule. These small foci had very much the appearance of tubercles, but on closer inspection a small necrotic center was to be seen, even in the smallest, and on microscopic examination these centres were seen to be composed of a few air-cells which had undergone necrosis precisely like that in the larger cyst. Now there were cases of typical pneumonia in the same herd, and the evidence in considering them as pleuro-pneumonia is that in some cases a whole lung was involved, in others a greater portion of a lobe, in others a small group of lobules, together with single lobules and small foci, varying in size from a pea to a pin's head in the same lobule. The same characteristics were presented in all of them, even to the smallest.

In conclusion, I wish to call your attention to a few specimens which I think are very interesting and instructive. In case No. 1 we have acute pleuro-pneumonia contagiosa of one lung, and in addition to this, an exudation and new growth of tissue surrounding the base of the trachea, and extending back through the superior mediastinum, involving the lymphatic glands, the œsophagus and the posterior aorta. This exudation looks precisely like that in the lung, and the lymphatic glands present many minute foci of necrosis. Case No. 2 presents the same changes around the trachea, but in this instance extends upwards so that it could be seen half way up the neck. It also extends downward by the large bronchi into the substance of the lungs, where there is chronic pleuro-pneumonia involving a considerable area in one lung. Case No. 3 shows exudation and new growth of tissue in the superior mediastinum, extending to the posterior border of the lung and involving all the organs in this region. The character of these changes shows the process to have been of some standing, while the only invasion of the lung tissue is at the root of both lungs in an area about half the size of a hen's egg, where there is undoubted contagious pleuro-pneumonia, the inter-lobular exudation being directly continuous with that in the superior mediastinum. The changes in the mediastinum are of much longer standing than those in the lungs, and certainly point to the fact that we may have what is termed pleuro-pneumonia contagiosa without any lung lesions.

LUNG PLAGUE BY MEDIATE CONTAGION.

By Prof. James Law.

I am always glad to read the earnest utterances of my friend and co-worker, Dr. J. W. Gadsden, and I need not say that I sympathize with him in the omission of his paper at the Consolidated Cattle Growers' Convention. Congratulation is due him, however, in that he has now had the privilege of placing it before a no less appreciative audience, and one better able to canvas its merits. That there is a substratum of truth in his position no one acquainted with the lung plague will deny; that the virus is not so tenacious of life as that of small pox, cow pox, glanders and tuberculosis, for example, will be readily conceded; but the extreme position taken in his paper, "that the contagion can only be communicated by contact with the living diseased animal," very few indeed can be brought to admit.

To begin with, I venture to assert, and without fear of successful contradiction, that Dr. Gadsden himself does not believe this. He has become so impressed with the perishable nature of the lung plague virus, that he has, perhaps unconsciously, stated his case much more strongly than he meant to. No one of the opponents of mediate contagion hold that "*actual contact with the living diseased animal*" is essential to the propagation of the disease. It is well to demonstrate this before proceeding to consider the position which I believe he is willing to contend for: "*that the virus is so easily destroyed that it is unnecessary to disinfect a building where cases of lung plague have been.*"

To return then to the question of "*actual contact.*" Dr.

Gadsden will at once admit that the susceptible animal need not come into *actual contact* with the diseased tissues in order to be infected. It is the products of the diseased lungs, coughed out or breathed out, that become the medium through which the infection is conveyed. Here then incontestibly the virus is conveyed through a *medium—the infected mucus*, or *the infected air*. The case then is *not one of actual contact with the living diseased animal.*

Take another case. In our large distillery stables the cattle are fixed in separate stalls or boxes, from which, as a rule, there is no exit until they leave to go to the butcher. In these, therefore, according to the doctrine of the *necessity of actual contact with the living animal*, the disease could only progress along a single line of stalls, and would be impotent to extend across the narrow passageway to the next. But who ever heard of lung plague confining itself to a single line of stalls in a distillery stable, or to two adjacent lines of stalls in which the animals faced each other? More than this, if an insusceptible animal was sandwiched in between two susceptible ones, it ought, according to the *actual contact* theory, to prove an insuparable barrier to the further propagation of the disease along that line of boxes, because *actual contact* could not take place across the intervening boxes occupied by the insusceptible animal. But we all know that the intervention of one or two such insusceptible subjects proves no barrier to the propagation of the disease along a given line of stalls. Here there can be no *actual contact*, hence the resulting infection is *through the atmosphere or some other medium.*

Another common occurrence in the distillery stable is no less conclusive. There is a tendency to a more rapid propagation of the infection along a given line, but it is always in a definite direction, determined by physical conditions. The troughs into which the swill is run are gently inclined from one end to the other of a line of forty or fifty cattle, and the swill is run into the higher and flows slowly along to the lower one. The rapidity of the propagation of the disease depends a good deal on the end of the trough at which the first diseased animal happens to stand. If at the elevated end, the propagation of disease along the row of cattle is rapid, but if at the depressed end, the propagation of infection is often slower. Manifestly it is carried by the flowing swill from the higher to the lower end of the trough, and infects the susceptible animals in its course. Here again there is the rapid conveyance of the *contagion through the medium of the food* and independently of all *actual contact with the living diseased animal.*

One case more, drawn from the enemy's camp. Dr. Francis Bridge, whose great experience and sound judgment are endorsed by Dr. Gadsden, relates the infection with lung plague of one herd by the use of a drinking horn which had been used a short time previously for drenching lung plague victims in another herd. This case is further attested by Mr. Thos. J. Edge, Secretary of the State Board of Agriculture in Pennsylvania. Here then *the horn, soiled with the infecting mucus, is the medium of contagion*, there having been no *actual contact.*

That cattle have escaped the disease though put in infected stables, proves nothing at all, or, if it proves anything, it proves too much. So of the exposure of cattle to contact with the diseased lungs after they have been removed from the body.

To give such instances any value two things must be demontrated: first, that the lungs of this particular animal contained the virus in a potent state, and second, that the animals brought into contact with this lung were animals susceptible to this infection.

Many individuals are not susceptible to a given infection, and many insusceptible at one time are found to be susceptible a short time after. I have made an unsuccessful inoculation of vaccina direct from the vesicle, though the virus proved extra active on the other cases vaccinated at the same time. I have a few months later successfully vaccinated the previously refractory subject, and have seen him undergo quite a severe attack. If I had inoculated this one subject only the first time, would it have been fair to blame the virus? Assuredly not. The scientific spirit says with Professor Walley, "One swallow does not make a summer." Much more, *the absence of a swallow does not make a winter.*

If all members of a given genus were equally open to contract a *contagion*, we would be made acquainted with epizootics of a very different type, and a fatal disease like lung plague or rinderpest would soon burn itself out. We would find in every infected herd not twenty per cent., forty per cent., or sixty per cent., but one hundred per cent. affected. Every epizootic would be the counterpart of the equine influenza of 1872, and the more fatal epizootics would bid fair to disappear from the face of the earth.

The escape of a certain number proves nothing, in the face of *one well authenticated case of mediate contagion.* Twenty years ago it was hard to convince the most experienced English physicians that tuberculosis was contagious. Men and women had grown old in the consumption hospitals without contracting the disease, and every physician of such a hospital was a living witness against contagion. For a long time glanders was thought to be *not contagious*, and even in our own time this was held by many with regard to chronic cases. Does the escape of the majority of the horses in a stable, or of the one horse working for weeks or months in the same team with a glandered one, prove that glanders is not contagious? Yet this is just the kind of evidence that proves (?) lung plague incommunicable by mediate contagion.

The potency of the infection varies greatly in different cases of the same disease, and this applies to infectious diseases generally. Hence we have our so-called epidemics, in which the affection is not only more violent but also more communicable, and hence more prevalent, and we have our intervals of respite, in which the disease smoulders with few and mild cases.

To return to the lung plague. The process of inoculation determines the specific inflammation in any part of the body where the virus is inserted, and if made in a place where the inflammation will not prove fatal the system is thereby fortified against a second attack of the plague. But in this there is *no actual contact with the living diseased animal.* I have carried the liquid hundreds of miles in a bottle, and by its successful inoculation have saved the inoculated herd. If *mediate contagion* were impossible there would be no objection to inoculation, for no infection could come of the presence of the lung exudate in the absence of *the living diseased animal.* But if the virus *apart from the living animal* cannot infect, what is the use of inoculation?

I submit that in place of furnishing negative evidence, which is put out of court at once by the production of one positive case, Dr. Gadsden should take up the many positive cases on record. Let him take up Fleming's works, or any European work on veterinary sanitary police, or let him take my monograph on lung plague and dispose of the cases therein related.

Before concluding, however, I am in duty bound to refer to the case of the Shufeldt distillery stables at Chicago. In the light of facts the Shufeldt distillery case was a triumph of disinfection, and not a disproof of the need of disinfection.

The stables were retenanted in January, 1887, and when I arrived in Chicago in the following April, I still found abundant evidence of the liberal use of whitewash containing chloride of lime. That the flooring was not removed was of less account, considering that the swill had escaped freely from the troughs and filled up the interval beneath the floor, *where it had undergone a strongly acid fermentation.* Now *the germ of lung plague lives in an alkaline or neutral medium and is not adapted to survive in the presence of a powerful acid.* The material beneath the floor then was a disinfectant of this germ. But, besides this, the whitewash liberally applied to walls and roof was of necessity even more liberally applied to feeding troughs and floor.

One point apparently in favor of Dr. Gadsden's position remains, though he has failed to specifically state it. One row of cattle was put in a line where no whitewash had been applied. The commissioners informed me that a partition had been put up and the whitewash applied up to this, and permission secured to fill up to this point. The owners, however, found it desirable to put in another row of cattle, and accordingly moved the partition to accommodate them. These and these alone stood on a floor that had not been whitewashed? Was it therefore not disinfected?

If any one has any doubt on this subject, I extend him the invitation to enter one of our New York cow stables on which one of our disinfecting corps is exercising its skill, and to stay for fifteen minutes if he can. He will have no further doubt about the disinfection. Our active agent is chloride of lime, which gives off so much free chlorine that none but those inured to the work can stand it, and these habitually wear sponges over their mouths. The free chlorine penetrates everywhere, into every crack and interstice, into every spongy body, and destroys every living germ. Nor is this a mere transient action. It continues to give off free chlorine for days and weeks, and this proves in every sense a thorough disinfectant.

This explains the result in the Shufeldt distillery stables. Not only the whitewashed portion but the single rows of stalls adjoining were thoroughly disinfected, having been enclosed under the same low roof, bounded by a close partition and subjected for weeks to chlorine emanations from the extensive interior wall and floor. It was, I repeat, a triumph of disinfection.

I regret that I cannot furnish many other experiments in the same direction from Chicago, for after my arrival every emptied stable was thoroughly disinfected and we never had a recurrence of lung plague in a disinfected stable.

One case, however, may be cited. In May we found a case of fatal lung plague in the hands of Timothy Flynn, who kept but one cow in a secluded locality, apart from other cows, between the river and the canal. On turning over the old records, I found that Timothy had lost the predecessor of this cow out of the same stable in March, and that the second cow had been obtained from the stock-yards some time later, and that the stable had never been disinfected. The stock-yards authorities were under a promise; which in my time they faithfully lived up to, to allow no cattle to enter the yards except such as came by rail and from outside Cook county. There is therefore every presumption that Flynn's cow contracted the disease from the stable, as have many others in my experience. See my "*Lung Plague.*"

I repeat what I said at the outset, that Dr. Gadsden does not believe that *actual contact with the living diseased animal* is necessary to infection. He allows that infection takes place through the expired air, and that this infection can operate at some little distance. He allows that the encysted sequestra, cut off from all vital connection with *the living diseased animal*, remain for a variable time infecting. I believe he will even allow that the swill flowing along the troughs in the distillery stables can convey the infection to the further end of the row. He is with us therefore in believing in *mediate contagion.*

Our difference is one of *degree,* not of *kind.*

I think Dr. Gadsden will agree with us further that certain conditions favor the retention of virulum and that certain other conditions favor its destruction. He will agree, for example, that the following agencies are inimical to the germ: heat and moisture, an acid environment, free exposure to air, to light and to electrical changes. He will agree that the following will favor its prolonged vitality: desiccation, exclusion of light and air, a neutral environment, and the absence of electrical storms. He will allow further that if the carefully garnered virus is kept cool it will for a length of time retain its power of producing the specific inflammation in the part of the bovine animal inoculated.

We agree then that the virus does not lose all power the moment it leaves the living body, and that under favorable conditions it will preserve its virulence longer than in other and unfavorable conditions. Neither he nor we can say exactly how long its virulence is retained in any particular case. Occasionally the survival of virulence is unpleasantly demonstrated by the reappearance of the disease in animals placed in an infected stable. The course of wisdom, therefore, is to make quite sure and disinfect *all infected premises.* I appeal with confidence to our record in Chicago in justification of this course and challenge comparison with the records of Great Britain, where infection from buildings is to a certain extent denied.

As the infection in Australasia and South Africa is carried into new herds by inoculation, and as in New York we find cases of disease in large herds in which inoculation is universal, we are compelled to class inoculation and infected stables as among the fruitful causes of the maintenance of the lung plague. No country that practices the one and neglects the disinfection of the other, succeeds in a complete eradication of the disease.

Dr. Gadsden nobly endorses our work in the extinction of the infected herd. Let him hold up our hands also in the matter of disinfection of all infected things, and he can contribute materially to the speedy and complete extirpation of the plague.

DISEASES OF THE SKIN AMONG DOMESTICATED ANIMALS.

By George Muller, Ph.D., Docent in the Royal Veterinary School of Munich.

(Translated by Wm. S. Gottheil, M.D., Instructor in Dermatology at the N. Y. Polyclinic, Lecturer on Histology at the American Veterinary College.)

Skin diseases are common enough among our domestic animals, but present by no means such varied symptoms as they do in the human subject.

This may be partly due to the fact that a number of skin diseases do not occur in the lower animals at all; but it is largely caused by the neglect from which dermatology has suffered at the hands of veterinarians. Diagnosis is rendered difficult by the hairy and generally pigmented skin, which frequently masks the dissimilarity of the most heterogeneous eruptions. The pig alone has a dermal covering analagous to that of man; but of all our domestic animals the pig is the one least affected by disorders of the cutaneous surface.

The horse, dog and sheep are most commonly troubled with this class of diseases.

The classification of dermatoses most in vogue is quite simple. Veterinarians speak of *acute* and *chronic* cutaneous disorders. This is not satisfactory, as many maladies, like the polymorphous eczema, may be either acute or chronic.

A division into *parasitic* and *non-parasitic* skin diseases is more useful, although there are a number of mykotic dermatoses concerning whose etiology the authorities do not agree. Nevertheless we had better accept and extend this classification; since a causal division is undoubtedly the ideal pathological classification.

Any attempt to classify skin diseases upon the pathologico-anatomical findings is prevented by the fact that one and the same anatomical change is found in the most varied dermatoses, and further because many of these conditions have not yet been especially studied.

For this latter reason more especially, it becomes impossible for us to use Auspitz's excellent classification; for seven out of his nine classes are based upon their etiology, and two only upon their pathological anatomy..

We will consider diseases of the skin in the lower animals under the following heads:

I.—NON-PARASITIC SKIN DISEASES.

1.—Erythema simplex.
2.—Dermatitis erythematoza.
3.—Eczema.
4.—Prurigo.
5.—Acne.
6.—Pemphigus.
7.—Urticaria.
8.—Erysipelas.
9.—Dermatitis gangrænescens.

II.—PARASITIC SKIN DISEASES.

a.—*Caused by Vegetable Parasites.*

10.—Alopecia.
11.—Favus.
12.—Herpes tonsurans.
13.—Dermatitis Canadensis (Axe).
14.—Stomatitis pustulata contagiosa.

b.—*Caused by Animal Parasites.*

15.—Scabies.
16.—Acarus.
17.—Dermatitis pruriginosa—(Rivolta).
18.—Hæmatopihus and Trichodechtes.
19.—Ixodes, Dermanyssus, Pulex, Simulia, Oestrus, Ochromyia, Lucilia, Leptus.

I.—ERYTHEMA SIMPLEX.

This occurs in animals as an acute process affecting the entire integument, and is seen as a moderate hyperæmia of the upper layers of the corium.

A hyperæmia of this kind may be caused by external irritants, such as traumata, chemicals, high or low temperatures—in short, by anything which can cause dilation of the blood-vessels and hyperæmia of the skin. In dogs the irritation of ammoniacal urine often causes an erythematous eruption in the vicinity of the meatus.

The symptoms consist of a vivid arterial reddening of the skin, which disappears on pressure. It is, of course, only visible on unpigmented spots, and can only be seen in animals under certain special conditions. The affected part is almost always evenly injected, a macular eruption, such as is sometimes seen in erythema hominis, being extremely rare.

Itching is rarely present in pure erythema in dogs. As a rule the affection disappears without leaving any trace, as soon as the cause is removed. Only when the hyperæmia has been very intense is there subsequent desquamation of the cuticle; or a pigmented spot is left behind, which slowly fades away.

The treatment of erythema is to be commenced with the removal of the cause. Then leadwater, or carbolized lotions, and ointments of zinc oxide or salicylic acid may be used. Finally, when there is much itching, solutions of nitrate of silver may be employed.

2.—Dermatitis Erythematosa.

This is distinguished from erythema simplex in that the stratum mucosum is swollen from exudation and cell emigration, and that *sometimes* the stratum corneum is raised and serous vesicles are formed, which may be ruptured.

D. erythematosa merges into eczema, and is seen especially in the sheep in the form of buchweizenausschlages, (fagopyrismus). This is seen when sheep are fed with the various kinds of polygonaceæ, especially polygonum fagopyrum, and are subsequently exposed to the action of the solar rays. Many explanations of this peculiar action have been given. The most probable one is that the use of this variety of food causes increased circulatory activity, and then the heat of the sun causes a kind of "erythema solare."

On the other hand it has been claimed that it is not the polygonaceæ as such which causes the eruption, but parasitic fungi of this species of food which come in contact with the skin of the animals, and cause the eruptions—especially where the increased solar heat renders its development rapid.

We have not space to discuss the arguments for and against these theories.

The erythematous dermatitis caused in this way is seen not only in sheep, but is occasionally seen in white pigs and on unpigmented spots of skin of horses and cattle.

It is generally localized on the head and is accompanied with considerable itching. There are sometimes congestive conditions of the respiratory mucous membranes, and even of the brain.

It is peculiar that the disease does not appear in white animals with black streaks, nor in animals kept in stalls, nor in animals that are only turned out to grass in dull weather; and that it disappears at once as soon as the diseased animal is brought into a dark place. A more or less obstinate desquamation of the cuticle remains after the disease is gone.

Treatment is indicated by what has already been said.

3.—Eczema.

Eczema in the domestic animals may be acute or chronic, and passes through the same stages as does the disease in the human subject.

There is a hyperæmia of the skin, with serous infiltration of the individual papillæ and emigration of white corpuscles into them. This forms the stadium papulosum. The exudation increases in the papillæ; the corneus layer is separated from the rete malphigi and we get the stadium vesiculosum. If the corneus layer is strong enough to resist the exudation for a time, the contents of the vesicles become milky, and eventually purulent, in consequence of leucocytic emigration.

In other cases the vesicles break, the skin is diffusely reddened over larger or smaller areas, at the site of each vesicle there is a loss of the epidermis, and the exudation trickles freely over the surface. This is the stadium madidans. The exuding fluid soon dries up into crusts and scabs, the color and consistency of which vary with the quantity of cellular elements they contain. We then have the stadium crustosum sive impetiginosum. After the efflorescence has disappeared, there persists for a time an over-production of epidermis, causing a loose scaliness of the surface. This is called the stadium squamosum.

It is rare, however, to observe this schematic course of the disease in its entirety. The hairy covering and the pigmentation of the skin cause single stages to be easily overlooked. In many eczemas the papular merges at once into the squamous stage. Others again develop at once from a dermatitis erythematosa (see above). And in most cases the animals themselves obliterate the characteristic features of the disease.

For eczema, especially in the more acute forms, is a fairly itchy malady and so incites the animal to rubbing and scratching that the deeper layers of the skin are soon involved in the inflammation.

1. In the *horse* eczema is seen as:

a. *Schwindflechte* (humid tetter).—A papular eczema, but seldom developing into vesicles, and generally passing directly into the desquamating stage; it is often seen at the time of the change of the hair.

b. *Mauke* (Schmutzmauke, Schrendenmauke,—Grease).—This is an eczema occurring at the back of the fetlocks from injuries of various kinds. It is vesicular, but soon passes into the stadium madidans and the stadium crustosum.

c. *Raspe.*—A chronic eczema, which develops from a dermatitis erythematosa and becomes squamous without going through the intermediate stages. It is distinguished by a considerable thickening of the skin. Its favorite seat is the inner surface of the knee of the anterior leg and the hock.

d. *Mähnengrind* and *Schweisgrind.*—A pustular eczema, appearing on the parts covered with long hair, the comb and the tail. It is usually overlooked for a long time, on account of its location, and hence important structural changes in the skin and permanent alopecia may take place.

e. *Kleinflechte* and *Schuppenflechte* (Hungerraüde).—A slowly spreading squamous eczema, appearing by preference upon the head and around the root of the tail. The primary papular and vesicular stages do not usually occur.

2. In *cattle* eczema occurs as *Kleinflechte* and *Schuppenflechte.* But there is a form of *Grease* (see above) which is peculiar, and is known as:

Schlempemauke.—This is a simple eczema, which as a rule goes through all the stages of that disease. It begins at the distal end of the hind legs and may spread to other portions of the body. It occurs in cattle which have been fed with large quantities of potatoes, especially with potato mash, raw potatoes or potato plant. The active agent is believed to have been found in the noxious principles contained in the potato plant, or evolved from it in the preparation of the mash (solanin, fusil oil, organic acids, large quantities of potash salts); but we have as yet no certain knowledge in this respect.

A malady analagous to schlempemauke has been observed after the use of grapes as food (*Traubenkammkrankheit.*)

3. In the *sheep* eczema appears as:

a. *Schwindflechte* (*false scabies*).—A papular eczema, with subsequent desquamation of the cuticle, appearing by predilection upon the neck.

b. *Maulgrind* (*Maulraüde*).—A circumscribed vesicular eczema, which rapidly becomes crustaceous and is seen in young animals in the vicinity of the mouth.

c. *Regenfaule* (*wet Raüde*).—In consequence of continuous rains, sheep exposed in the fields suffer from a softening of the epidermis of the skin of the upper parts of the body. There develops in consequence thereof a simple eczema, which usually runs a regular course, and may be followed by a not inconsiderable loss of wool.

4. In the *pig* eczema is seen as:

Rufs (*Pechraüde*).—This is a pustular eczema, which soon goes over into the stadium impetiginosum, is usually chronic in its course, and is dependent ultimately upon a scrofulous dyscrasia.

5. In the *dog* eczema appears in the most varied forms upon the back, head, neck, outer surfaces of the extremities, etc. It is especially old and well-bred dogs (Pinscher, Leonberger, Jagdhunde)which are subject to eczema; and perhaps this has led to the idea that eczema canis is a constitutional disease, of which the skin malady is only a symptom; very much as inflammation of the joints is an external symptom of gout. But the theory is as little proven as is that other one which would make eczema of dogs of mycotic origin. We will make no mistake if we say that eczema canis *per se is a purely artificial malady; but that with*

certain constitutional changes the nutrition of the skin and its power of resistance to traumata may be so lessened that the occurrence of eczematous erruptions from external irritants is greatly favored.

In spite of the multiformity of appearance of the disease in consequence of the violent scratching and rubbing, we can distinguish three chief types of the malady.

The *first type* appears as small, irregular spots. The eruption begins as an eczema papulosum; the papules rapidly become vesicles, stadium vesiculosum; and this runs into the stadium madidans. The stadium crustosum follows less rapidly.

The *second type* tends to spread peripherically. It begins as eczema papulosum. The isolated papules are scratched open, or change into pustules. They then form small crusts, under which the regeneration of the epidermis goes on.

The *third type* is eminently disposed to become chronic. The short primary stages are usually overlooked, and a large surface of the diseased skin is found swollen, infiltrated, at first white and later covered with crusts which, in consequence of the scratching, are generally stained with blood. Later on the partial loss of hair, the thickening of the skin, and the marked epidermic desquamation alone remain.

The *treatment* of eczema is greatly impeded by the impossibility of applying protective dressings, and of preventing the animals from scratching and rubbing themselves.

After removing the causes and thoroughly cleansing the affected portions of skin, we may use :

a. In the *stadium papulosum* and *vesiculosum*, cooling and protective *salves* (ung. zinci, plumbi, diachylon. hebr., præcipitat. alb., salicylatum) or *powders* (zinc. ox. 1, amylum 5.)

b. In the *stadium madidans* and *impetiginosum*, drying and astringent salves (ungt. tannic., plumbi tannici, acidi borici, (Gresswell); or powders (ac. salicyl. or iodoform with amylum or cort. quercus); or solutions (sol. argent. nitric. 1: 15, sol. hydrarg. bichlorat 1: 100 to 200.)

c. In the *stadium squamosum* and *in all chronic eczemas with much infiltration of the skin*, alkaline soaps, concentrated solutions of caustic potash, pix liquid, carbolized oil, carbolized glycerine, chrysarobin, ichthyol, iodoform (Popow), naphthalin (Schadrin.)

In the case of dogs it may be necessary to take into consideration the above mentioned more remote internal causes by using purgatives (aloes, calomel or arsenic.)

4.—PRURIGO.

The affection known by this name is of rare occurrence in horses, cattle and dogs, and has been but little studied. It is an itchy eruption and is *probably dependant upon internal causes.* There are generally spread over the entire rump isolated, small, softer or harder nodules, projecting but little above the normal level of the skin, and accompanied by a most intense itching. The consequent scouring soon ruptures the papules, and they become covered with a blood crust. All further changes of the skin occur in consequence of the rubbing and scratching.

The *treatment* of this very obstinate, but *not incurable* dermatosis has consisted of the exhibition of laxatives, diuretics, arsenic, and the local application of weak solutions of caustic potash, carbolic acid, salicylic acid, corrosive sublimate, pix liquida, etc. The best results seem to have been attained by care of the skin and attention to the digestive organs.

Several authors have also observed in the horse and cow an itching *without papulation*; it is to be regarded as a neurotic affection, analagous to the pruritus cutaneous of man.

5.—ACNE.

This is an eruption similar to the acne vulgaris of man. Single or grouped lentil to bean-sized inflammatory nodules appear upon the skin. Each one of them is in connection with one or more sebaceous glands, and emits a soft caseous material upon pressure. The malady appears in summer-time in the horse and the sheep, and may affect any portion of the body. It is especially apt to appear on the neck, only occasionally, when the itching causes rubbing and scouring, or when the affected portions of skin are pressed upon by the harness, the nodules may unite into larger inflammatory masses, and finally lead to the formation of scars.

The therapy consists in emptying the papules and keeping the follicle mouths open. This is to be effected by pressure, the removal of scales, frictions with alkaline soaps, spiritus saponis kalinus, sublimate solutions, carbolized glycerine, and the like. As a rule the efflorescence disappears spontaneously when the weather becomes cooler.

6.—PEMPHIGUS.

This is a very rare skin disease and makes its appearance accompanied by an inflammatory fever. Upon a surface of normal or erythematous skin there appear pea to hen's-egg sized vesicles with serous contents. After rupture, the cover of the vesicle and the dried secretion form crusts upon the excoriated surface, and restitution of the epidermis occurs, leaving a shining skin behind. Two cases of the disease only have been recorded, and they in cattle; one by Seaman in 1852, and one by Loisch in 1858.

We may place midway between pemphigus and eczema vesiculosum, a dermatosis which affects horses especially. It appears in the neighborhood of the mouth and nares, and is described as *hespes labialis* or *heat eruption.* Accompanied by fever there appear closely aggregated lentil-sized vesicles, seated upon a reddened and moderately œdematous base. These burst or dry up, and form small yellowish or brownish crusts. In a short time the epidermis is renewed and shining, brightly pigmented spots are left behind; so that the disease rarely lasts longer than one week.

7.—URTICARIA.

By this we understand an acute dermatosis occurring in horses, cattle, pigs and dogs. Sharply defined wheals appear in consequence of sudden congestion, and then occurs serous imhibition of the corium and the corpus papillare.

These wheals can best be seen in the pig in consequence of its generally unpigmented and hairless skin. The lesions, as a rule, are dollar-sized, raised $\frac{1}{2}$ mm. above the normal skin, they are reddened or pale, and are surrounded by a pink areola. Under certain conditions the wheals may coalesce and form broad, diffusely-reddened swellings. Under others again small hæmorrhages into the corpus papillare may cause them to assume a vivid dark-red color.

In all animals there is almost invariably fever and gastric disturbance with the eruption. In fact, in many cases digestive disorders must be regarded as the immediate causes of the appearance of the exanthemata. Besides this, urticaria may be caused in special cases by the use of very innocent foods, (raw potatoes, lentils, etc.,) and by various other causes; so that we are justified in regarding the urticaria of animals as identical with the human disease of the same name. It is in reality, a vasomotor disturbance of the skin, dependent upon the most varied irritants.

In horses and cattle urticaria appears as:

a. *Urticarial fever*—accompanied by a fever of invasion, the wheals appear simultaneously on various portions of the body and may form confluent spots as large as the palm of the hand. Very rarely distinct vesicles are developed on account of the abundant exudation into the wheals; they then burst and become scabbed. There is neither intense reddening nor itching. Treatment is unnecessary, as the malady quickly disappears of itself.

b. *Urticaria chronica.*—The wheals appear without febrile accompaniment, are isolated and soon disappear. They are, however, immediately replaced by new ones ; and so the malady may last for months, and generally disappear only after vigorous purgation (aloes) has been brought on.

In the pig urticaria is called *nettle-fever.* It appears as above described, with gastric symptoms and considerable febrile movement. The exanthema as a rule disappears spontaneously in a few days ; and only in rare cases is it necessary to use laxatives and clysters in addition to the relaxing food proper for these cases.

8.—ERYSIPELAS.

By erysipelas we mean an inflammation of the external integument occurring in the larger domesticated animals, mostly upon the extremities. It is distinguished by its tendency to rapid spreading, and is accompanied by a fever which deffervesces in a few days as quickly as it has risen. There is no solution of the continuity of the integument, and it is followed by a small and insignificant desquamation.

Shortly after the outbreak of a more or less violent attack of fever, accompanied sometimes by gastric symptoms, a circumscribed spot of the epidermis is seen to be hot, tense and very painful to the touch. When occurring upon unpigmented skin a vivid redness appears,but little elevated above the level of surrounding parts, and spreads rapidly.

As a rule the redness finally involves the entire extremity and is divided from the normal skin by a raised or even swollen border. But rarely does it begin gradually.

Severe cases may go on to the formation of vesicles, the fluid of which is purulent. These soon burst, and leave small excoriations behind. Inflammation of the lymphatic vessels and glands belonging to the affected portion of skin are also occasionally observed.

This malady is undoubtedly caused by a streptococcus, and but rarely ends unfavorably. Treatment consists of lukewarm lavements with soap and water to relieve tension, and the inunction of carbolized oil or carbolized glycerine; all the so called specifics have proved worthless. Camphor ointment, iodine solution, resorcin and the subcutaneous injection of carbolized water or sublimate solution have no effect on the disease.

9.—Dermatitis gangraenescens.

(Brandmauke).

Horses and cattle are occasionally affected by more or less extensive gangrene of the skin, especially upon portions of the extremities covered with white hair. Traumatisms of various kinds —falls, solar heat, wet, ice, etc., may cause the affection. Scars are left after it has run its course. Very probably the circulation is interfered with by the injury—and hence occurs death of an area of skin.

Treatment consists of the removal of necrotic tissue, and the use of antiseptics.

(*To be continued.*)

COMMENCEMENT EXERCISES AMERICAN VETERINARY COLLEGE.

The commencement exercises of this institution took place at Chickering Hall on the first of March. A large number of the friends of the college, of the alumni and of the graduates honored the occasion with their presence. The Board of Trustees and the members of the faculty occupied seats on the platform, which was handsomely decorated with numerous bouquets of flowers designed for the new veterinarians. The orchestra, under the lead of Cappa, of the Seventh Regiment, added to the amenities of the occasion in a noteworthy manner. Prof Weisse, of the Board of Trustees, bestowed the diplomas upon the thirty-two recent graduates. Prof. Doremus presented the prizes. Dr. T. Pease, of the graduating class, delivered an excellent valedictory and Dr. Deems held the close attention of the audience by his address, one of the best ever delivered on a similar occasion.

Dr. M. W. Tritschler received the gold medal offered by the Board of Trustees for the first best general examination. Dr. G. F. Pease received the set of books given by the Alumni Association for the second best general examination; Dr. H. B. Ambler carried off the gold medal given by the faculty for the best practical examination; and Dr. T. M. Buckley received the anatomical prize granted by Prof. Liautard; Dr. J. W. Harwood secured Dr. Michener's medal for the best paper presented and defended before the College Association.

The following gentlemen received the degree of Doctor of Veterinary Surgery. (D. V.S.)

Ambler, Henry Babcock	New York.
Ball, Harry McFadden	Ohio.
Bradley, John Linn	Pennsylvania.
Buckley, Thomas Michael	Brooklyn, N. Y.
Bueter, Bernard Henry	Kentucky.
Chapin, Myron Emerson	Massachusetts.
Decker, Elbert James	New York.
Dodge, Arthur Leroy	New Hampshire.
Engeman, William Albert	New York.
Faust, Otto	Poughkeepsie, N. Y.

Fletcher, Alexander	Ravenna, Ohio.
Ford, Frank Branco	W. Virginia.
Harwood, James Walter	Illinois.
Hexamer, Adolp Carl	New York.
Hoffman, Daniel R.	Maryland.
Hunt, Frederick Wilcox	New York.
Jackson, Charles Clow	Missouri.
Lathrop, Gilbert Azur	Pennsylvania.
Lowe, Wm. Herbert, D.V.S.	Paterson, N. J.
McDowell, Harris B.	Delaware.
McIntosh, Albert Hooper	New Jersey.
McKillip, David William	Illinois.
Pease, James Frederick	Illinois.
Polk, Cyrus	Delaware.
Smith, George Augustus	New York.
Spurr, Alfred Isaac	Massachusetts.
Streets, John James	Illinois.
Tritschler, Morris William	Pennsylvania.
Van Nest, Robert Addy	Minnesota.
Vreeland, Edgar Avery	New Jersey.
Wilkinson, John Wright	Meadville, Pa.
Wright, John William Henry	New York.

VETERINARY APPOINTMENT.

As we go to press we receive information of the appointment of Dr. A. A. Holcombe as Territorial Veterinarian of Wyoming, in place of Dr. Hopkins, whose term of service has expired.

Dr. Holcombe needs no introduction from us to his colleagues in the profession, and no one better than he could have been selected to take the place of Dr. Hopkins. Dr. Holcombe was graduated from the American Veterinary College in 1876, and subsequently worked well for his alma mater for some time in the responsible post of Professor of Surgical Pathology.

On leaving New York, he was appointed Chief Veterinarian in the United States Army in Kansas, and subsequently became State Veterinarian in the same State, where he served for two terms. He is now called to a broader field of labor and usefulness, in which, as we all know, he will continue to do honor to his profession and to himself, as he has already and always done in similar responsible positions. We need not say that he has our best wishes.

SOCIETY MEETINGS.

PENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION.

The annual meeting of the Pennsylvania State Veterinary Medical Association was called to order Tuesday, March 6th, at 11 a.m., at Donaldson Hall, Philadelphia, by the President, Dr. Thos. B. Rayner.

On roll call the following members responded: Drs. T. B. Rayner, W. D. Kooker, Geo. B. Rayner, W. L. Zuill, J. Curtis Michener, W. Horace Hoskins, James B. Rayner, Jno. R. Hart, M. J. Collins, John B. Raynor, N. E. Reinhart, J. R. Keelor, C. F. Weber, W. U. Custer, H. T. George, Zeno S. Keil, Chas. T. Goentner, Alex. Glass, W. H. Knight, Chas. Schaufler, Robert Gladfelter, R. S. Huidekoper, P. M. Minster, Jonathan Price, Francis Bridge.

The minutes of the previous meeting were read and approved, after which the Association proceeded to the election of officers as follows: President—Dr. Thos. B. Rayner; First Vice-President—Dr. J. Curtis Michener; Second Vice-President—Dr. W. U. Custer; Third Vice-President—Dr. H. T. George; Corresponding Secretary—Dr. W. S. Kooker, 416 N. 4th St., Phila., Pa.; Recording Secretary—Dr. Robert Gladfelter; Treasurer—Dr. W. L. Zuill; Board of Trustees—Drs. W. Horace Hoskins, W. L. Zuill, John B. Raynor, C. S. Goentner and J. Curtis Michener.

The following applicants for membership were favorably reported by the Board of Trustees, Drs. S. J. J. Harger and Chas. Williams, both of Phila.

After a recess of an hour the meeting re-convened, and under the reports of committees, the Association was informed that the Legislative Committee were ready to make their appeal to the State Government for recognition and protection as soon as the Legislature convened.

An amendment offered at a previous meeting for the creation of a permanent Commitee on Veterinary Sanitary Police, was favorably acted upon, and the President appointed Drs. W. L. Zuill, N. Rectenwald and C. C. McLean upon that committee.

A similar amendment to create a Committee on Veterinary Intelligence and Education in the State, was favorably acted upon and the President appointed the following members: Drs. W. Horace Hoskins, Francis Bridge and C. F. Weber.

Under the head of new business, the resignation of Dr. J. C. Fly as a member was received, but not acted upon, owing to his holding the office of Treasurer, and his accounts were not ready to be audited.

The following amendment was offered to the By-Laws by Dr. Hoskins: That any member offering his resignation to the Association, voluntarily pledges himself to forfeit his certificate of membership to the Association.

A charge of violation of the code of ethics was made against Dr. John R. Hart, and was referred to the Board of Trustees. The latter sustained the charge and moved that six months be allowed the defendant to decide whether he would sever his connection with the People's Mutual Live Stock Insurance Company, or suffer expulsion from the Association. The committee's report was received and accepted.

Reports of cases being in order, Dr. J. Curtis Michener reported a case of transverse fracture of the patella, with recovery.

Inversion of the uterus in the cow, and the value of amputation of that organ, was brought up and evoked quite a lengthy discussion by many of the members.

It was decided to hold the next meeting at Easton, and that Drs. Goentner, Bridge and Keil prepare papers for the same.

After the transaction of some minor business the meeting adjourned.

W. HORACE HOSKINS.

KEYSTONE VETERINARY MEDICAL ASSOCIATION.

At a regular monthly meeting of the Keystone Veterinary Association held on February 4, 1888, at the Veterinary Department of the University of Pennsylvania, Dr. Zuill called the meeting to order at 8 o'clock.

At roll call eleven members responded.

After the usual legislative business had been gone through with Dr. Formad began a very able and instructive address on Tumors, in which he stated he wished our members to all assist as much as possible in bringing any that they might have in their collections, so as to make it as complete as possible.

He presented a very complete classification of them on the blackboard and placed them in the order of their frequency.

Fibroma, the first on the list, he stated to consist of a simple collection of connecting tissue. There are two varieties, the hard and soft, the former more common in man. Myxoma always starts as fibromia, also false muroma is of this variety. Specimens were then exhibited from neck of mule and testicle of horse. In regard to sipoma the Doctor said it was found as frequently in animals as man, always grew peupheral and is a fibroma filled or infiltrated with *fat.*

An enormous sipoma taken from the leg of a dog by Dr. Zuill was then presented for inspection, together with numerous other beautiful specimens from the college museum, among which was a polyphoid myxoma which occurred in the ventricle of the brain of a horse, producing wonderful cerebral disturbances before death. Under the head of condroma and ostro condroma, so common in man, and which reach enormous proportions at times, there were no specimens to present. The Doctor said ostio-orma was a true bone tumor caused by irritation of the bone substance.

Ostiophytis grow in muscles and are common in the shoulders of soldiers who have to carry heavy weapons, also frequently found in the brain of the African.

Odontoma is like ivory in composition and structure.

Muroma is made of pure nerve tissue, develops slowly and is very painful. A specimen from the radial nerve of horse was presented. The Doctor said cutaneous muroma was a cause of neuralgia; it is *non*-medulated.

Myoma is made up of muscular tissue.

Rhaldomyoma is congenital, usually occurring in kidney, common in human practice but rare in veterinary. A specimen from kidney of pig was shown.

Angioma constitutes the "birth-marks" in man.

Lymph angioma causes large eyelids and thick lips in man; not seen in animals. Lymph angioma is benign and the Doctor has seen it in pigs.

Onychoma is a thickening of the epidermis; occurs as corns under harness, etc. A specimen from the museum was then presented, which was taken from a horse. They may reach a great length and appear as a horn. Dr. Glass saw one from the back of a cat.

Papilloma, or warts, are common in animals as well as man, usually hard, but soft when occurring in mucous surfaces. A wonderful display of these tumors was presented in the oral cavity of a dog.

Admoma usually occurs in the mammary gland aud other vacimos glands. Several specimens from the mammæ of bitches were then shown. To distinguish admoma from cancer, in the former the skin is freely movable, while in the latter it ulcerates.

Under the head of cysts there was a retention cyst of a mule containing sebacious material. Dr. Huidekoper spoke of the so-called "shoe-evil" as an instance of cystic degeneration.

The ovarian cysts of a cow were then exhibited and Dr. Formad said they were fibrid with cystic changes. There was one presented from ovary in bitch and also a cystic sarcoma of intestion and one of ovary in mare, and a dumoid cyst of a fowl filled at one time with feathers, also several others of like interest.

Dr. Formad showed fœtal bones found in the fallopian tubes of a mare, showing a remarkable instance of extra uterine pregnancy.

Dr. Zuill mentioned a well authenticated case of a fœtus found in the abdominal cavity of an ox. He also mentioned a case of hypospaduis thought to be a case of hermapheoditicism.

As the evening was far spent Dr. Huidekoper moved that Dr. Formad should continue next month, which was seconded and unanimously carried.

The meeting then adjourned.

At a regular monthly meeting of the Keystone Veterinary Medical Association which was held on March 3, 1888, at the Veterinary Department of the University of Pennsylvania, Dr. Zuill presided, the minutes of previous meeting were read and roll called, to which eleven members responded.

Dr. Formad resumed his lecture on Tumors, starting with actinomycocis, which is a disease affecting bone, and he considers it a disease closely allied to tuberculosis (Pearl Disease). It is of parasitic origin, otherwise it has the structure of sarcoma and he suggests the name of actinomycoma. There are one or more fine specimens of this disease.

The sarcomata are well represented in animals and many fine specimens were presented from the museum. The most common under this head are the melanotic sarcoma, but not cancer. It is most common in grey or light colored horses.

In man it generally starts in the eye and gives metastasis. It sometimes starts in the skin. It never gives metastasis to the skin but always to an internal organ. It proliferates to a large extent and produces enormous metastatic tumors.

Every black tumor (excepting those caused by accidental hæmorrhage) are melanotic. Numerous specimens were then exhibited.

Dr. Hoskins mentioned a remarkable case that was situated in rectum of a horse which subsequently broke down, discharged contents and animal recovered. Melanotic tumors in horse are often situated in skin and especially about the natural openings. Prof. Zuill mentioned case where he thought the tumors nearly equalled the body weight of the patient. Numerous interesting cases were reported by several of the members.

Sarcomas are divided into two classes, the benign and malignant. The benign grow slowly, are hard and are situated deeply; the malignant grow superficially and are in the soft lymph glands.

There was a very remarkable specimen of myoloid sarcoma presented in the superior maxilla of a horse, occurring in the practice of Dr. Kooker, who stated it was caused by a traumatism, and the large bony growth was only about two weeks in forming and the last three days of the animal's life he experienced great difficulty in breathing, showing complication of the ethinoid and turbinated bones.

Spindle-celled sarcoma of a mule was then presented from the museum. This sarcoma, which in the start is comparatively benign, if removed is likely to return as round-celled and then to be malignant.

Dr. Formad then produced a beautiful drawing of the fungus of actoinomycocis. Cases of epithelioma in nose of cat and paw of dog were shown. Sqaumous epethelioma of horses were then shown. The Doctor said these in their growth penetrate deep. Dr. Zuill also mentioned case of cancer of stomach, which is rare. There were a number of fine specimens of glandular cancer, principally from the mammary glands of bitches. Dr. Formad expressed his agreeable surprise in the size of the collection of pathological specimens, considering the age of the Department.

It was then moved by Dr. Goentner that a vote of thanks be tendered Dr. Formad for his excellent production, which was seconded and unanimously carried. This ended the exercises and the society adjourned.

Chas. Williams, *Secretary.*

CORRESPONDENCE.

VETERINARIAN WANTED.

Montgomery, Ala., March 12, 1888.

Prof. A. Liautard:

Dear Sir.—On the recommendation of *Turf, Field and Farm*, I write to say that there is not a better location to be found for a graduated veterinary surgeon than in this city. We have had one *horse doctor* after another, but no veterinary surgeon, excepting one who soon got drunk and stayed so until he left for parts unknown. The one we have here now will not use the knife even for castration, yet he has made a good living from the first. This city contains nearly 30,000 inhabitants, and a good man can make money from the start. There is plenty of work in the county and towns within 15 miles.

I refer you to my old friend Col. S. D. Bruce of *Turf, Field and Farm*, as to who and what I am.

Very respectfully,

C. W. Kennedy.

PRACTICE FOR SALE.

GREENSBURG, IND.

I have made up my mind to go South, on account of the failing health of my family, and will sell my property, one of the best and most commodious veterinary infirmaries and offices in the State, and a small dwelling of four rooms on adjoining lots, 62 x 120 ft, for $2,500 and recommend a good man to my practice, which is worth from $2,000 to $2,500 per year, with no opposition amounting to anything, in this beautiful city of about 6,000 inhabitants and fine surrounding country; property very cheap at the price. Apply at once to

A. D. GALBRAITH, D.V.S.

NEWS AND SUNDRIES.

ANTIRABIC INOCULATIONS AT BARCELONA.—Dr. Ferran, who has charge of the pathological laboratory at Barcelona, has treated eighty-five cases of rabies by inoculation, without a death. Twenty-five of the patients had been bitten by animals positively known to be rabid. At first Dr. Ferran carried out the inoculation of his rabbits according to Pasteur's method, *i.e.*, by trephining. Recently, however, he has adopted a new, and, as he believes, an improved plan, viz., the injection of a single drop of the emulsion of the medulla containing the virus into the anterior chamber of the rabbit's eye. This produces exactly the same effects in about the same time as the trephining method.—*Medical Record.*

GLANDERS IN NEBRASKA.—State Veterinarian J. Gerth reports that since April, 1887, to February, 1888, he has destroyed 361 horses suffering from glanders.

EXEUNT BUNNY?—It is announced that three agents of Pasteur have sailed for New South Wales with the hen cholera microbes to inoculate and exterminate rabbits in Australia.

A STITCH IN TIME.—It is stated that Dr. M. E. Johnson, assistant state veterinarian, was called a few days ago to Derby, Lucas Co., Iowa, where he found six cows, five hogs, three horses, and several dogs suffering from hydrophobia. He ordered that the animals be killed.—*National Live Stock Journal.*

AMERICAN VETERINARY REVIEW,

MAY, 1888.

EDITORIAL.

American Veterinary Review Prize.—Let us once again call the attention of veterinarians to it—our object—*original work* is what we want—an essay of real originality and genuine merit—not so much quantity as quality—our selected committee will look not only after the value of the papers as contributions to veterinary literature, but also after their merits as indicating original research and experiment—two papers already on hand—extension of time for entry of papers. Swine Plagues.—Why not gather them under the same name as Prof. Walley did of bovine plagues—amount of writings about them—why not put them all under one head—but after all we know that they represent three affections, rouget of rothlauf, hog cholera or infectious pneumo-enteritis and diphtheria of swine, and swine plague or schweineseuche—what is wanted—a vaccine for each—one is already known for rouget—let us have another. Mediate Contagion in Pleuro-Pneumonia.—Dr. Salmon's answer to Dr. Gadsden—this paper was read at the United States Veterinary Medical Association meeting in Baltimore—with the letter of Prof. Law it gives Dr. Gadsden material for reflection. Veterinary Dermatology.—Dr. Gotthiel's translation—its value to the English readers of veterinary pathology—the subject more or less ignored and well worthy of closer study and attention, even at the hands of the faculties of veterinary colleges. Diagnosis in Doubtful Cases of Glanders.—One of the most difficult diseases to diagnosticate under some special conditions—means to help the veterinarian—inoculation—auto-inoculation—the donkey, the dog, guinea pig and the rabbit used for that purpose—glanders is a virulent disease—it is the function of a living being—the presence of the microbe made out by cultivation.—the *potato* as the best ground for culture—Dr. Nocard's experiments—the importance of the application to positive diagnosis. Fifth International Veterinary Congress.—Our notice of the appeal to foreign veterinarians—let the profession of the United States heartily respond to the call.

American Veterinary Review Prize.—It is quite unnecessary, as a matter of information, again to inform our readers of our annual offer of a prize to the author of the best *original* paper upon a subject relating to veterinary science, or to repeat the remarks we have already offered upon the subject. Still we desire to bring it again into notice in order to emphasize our view of its importance, and our appreciation of the interest which we would excite in the minds of those who may think of entering the lists and competing for the premium.

Our anxious wish is that we may be instrumental, through the method we have adopted, in the production of a paper bearing its own evidence of fresh research and earnest investigation—an essay of real originality and genuine merit, which will be at once recognized and acknowledged as a contribution to American veterinary literature of permanent value and excellence: something that will not be sure to perish with the current ephemera of the press.

The pains we have taken in the selection of the Committee of Award and the success of our endeavors in this important matter, will so amply guarantee the competitors against possible injustice arising from partiality of feeling or incompetency of judgment, as to leave no room for question as to the correctness of whatever decision may be rendered; a fact than which nothing could more surely establish and enhance the value of the distinction which will inhere in the decision itself, and constitute the chief significance and worth of the prize.

Two of the competitive papers have now been received, and will be submitted to the Review, to be followed without delay by such others as may be offered, in their due order.

We had originally fixed the limit for the presentation of the essays to the first of April, but upon a reconsideration of the point, we have decided to extend the date to the fifteenth of June, at which time we shall conclude that all who contemplate a participation in the contention will have perfected their intention and forwarded their essays. Should any of the papers fail to reach our hands at the time appointed they will be reserved for the next year's contest, unless they are withdrawn or otherwise disposed of by their authors. Our desire to improve the occasion of some authentic meeting of veterinarians, for the announcement of the name of the successful competitor, is our principal reason for the change of date thus designated. A shorter time would be insufficient for the publication of the papers in due season.

And now the arena is cleared and awaits the entry of the contestants for the meed of honorable praise and commendable ambition.

Swine plagues.—Since our esteemed colleague, Professor Walley, has given his attention to the subject of the several contagious diseases of ruminants, which work such havoc among the victims of their attack, and has included them all in a single group under the term of " bovine plagues," why would it not be a good work for some of our friends to perform the same office for the three affections of the swine family which have proved so refractory, both to sanitary and medical treatment, and so baffling to pathological research, and which prove so destructive, and entail such loss to the owners of this species of property throughout the world, by bringing them under the common designation placed at the head of these remarks, and so descriptive of their character, as " swine plagues ? "

It would be no easy task to measure the amount of literature which has been devoted to these diseases, or the countless pages of discussion they have elicited, more, probably, in our own country than among European writers. Indeed, so much has been said and so much published upon this theme that it was becoming difficult to determine whether any real progress had been accomplished by the researches which had been prosecuted, or whether it might not be reasonably feared that the darkness which enveloped the disputed issues was not rather becoming more and more dense, and the confusion worse confounded, by a very excess of discussion.

But if pathologists and veterinarians have patiently, if dubiously as well, waited and watched while observation and discovery have been in progress, they must at last feel fully satisfied with the results which have been secured, and especially by what has been accomplished on our own continent.*

From the aggregate of the opinions which have been expressed and from all that can be gathered from the collective views of observers throughout the world, the existence of three diseases, essentially different but which have been grouped under the single title of "swine plagues," is now a definitely settled fact. These diseases are:

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* See Review for April.

1st. The "rouget" of the French and the "rothlauf" of the Germans, which it seems has not yet appeared on this continent;

2d. The "hog cholera" of this country, corresponding to the "infectious pneumo-enteritis" of the English and the "diphtheria of swine" of Sweden and Denmark; and

3d. The "swine plague" of Salmon, or the "Schweineseuche" of the Germans.

Let us now hope that the next important announcement we shall receive on the subject will be of an authenticated and successful means of treatment, of relief to breeders and owners, of safety for every one interested in swine property.

Pasteurian vaccination was long since adopted and has been for years successfully practised in many of the countries of Europe, and if any apparent failures have attended the treatment, the fact has been due to the improper employment of the virus, in inoculating for a disease other than that which it was designed to control. But its success has been assured when there has been no error in discriminating the disease, and its application has been confined to genuine cases of the rouget, from which it has been generated. That which has been found true in rouget must, and certainly will be found to be equally so in the other two forms of swine disease, and we consequently learn from our French news that Messrs. Cornill and Chantemesse have in that country succeeded in attenuating the virulence of the microbe of hog cholera, with such results as to create true viruses, which confer immunity after a mild attack of the disease.

And from Nebraska we hear of important progress achieved by Professor F. S. Billings in his investigation in the same direction, and that he has in fact succeeded in obtaining the desired virus. No time should be lost in the promulgation of our American discoveries, and in putting their authenticity and value to the test. American investigators have contributed largely to our present knowledge of swine plagues, and they cannot afford to remain idle now, while the subject of treatment—the great practical question—both prophylactic and sanitary, still evades solution. Let us hope and predict that the credit of inaugurating a successful theory and practice of treatment will soon fall to the credit of American discovery and demonstration.

Mediate Contagion in Pleuro-Pneumonia.—We greatly regret the delay which has attended the publication of this interesting and important paper, which should have been printed in our April number, and which, moreover, should have been accompanied by the report of the meeting of the United States Veterinary Medical Association, at which it was read. But if the failure to print it at that time involves no culpability on our part, neither is it due to any fault of ours that we have not yet published an authentic report of the proceedings of the meeting in question, since it has not yet reached our hands from the Secretary's office. No one regrets this omission more than ourselves. Many of our readers are members of the Association, and it was amidst fostering influences found in that body that the Review found its inception and began its existence. It is difficult, therefore, to realize the fact or comprehend the reason, if any there be, for the total ignoring, on the part of the Secretary of that body, of our perfect readiness to give the ordinary publicity to the transactions of the Association. We have endeavored to repair this omission, and we feel assured that our readers will read Dr. Salmon's paper with the interest it deserves.

In this paper and the letter by Professor Law,* Dr. Gadsden will be apt to encounter not a little material for reflection.

Veterinary Dermatology.—In our April number we began the publication of a translation by Dr. W. Gottheil, of a paper on Diseases of the Skin of the Domesticated Animals, by Dr. G. Muller, of Berlin. We are quite sure that our readers will recognize in this treatise a work of importance and value, and appreciate the publication accordingly. The subject of dermatology is one which has been comparatively an ignored department of veterinary education. In fact, we know of no veterinary colleges which include this among their regular subjects of study. Like medical ethics, to which reference was not long since made, dermatology is rather than otherwise adjudged to be a fit subject for instruction alone.

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* See April Review.

Aside from this it may be asked what of its literature; where (with the exception of what may be found in the works of French and German writers) can the English reading veterinary dermatologist find help and information? Though this is an important subject, it is in fact one concerning which the pupil will too often look in vain for information to his instructors, upon whose curriculum it has not yet been accorded a place. (We are happy to be able to say that we are not of the number who overlook its importance and ignore it in teaching.) It is high time for veterinarians to remember that in this branch of his scientific specialty there is something more to learn than the old sollenders and mallanders, and the scratches and mud fever, and that the therapeuty of the skin is not limited to the use of the blue wash, the tar and sulphur, or the lard and gunpowder applications.

If Megnin of France, and others have sought in their writings to invest the science of veterinary dermatology with somewhat of the importance and interest naturally belonging to it, this simplified translation of Director Muller will undoubtedly receive a proper welcome from our English-reading veterinary scientists, and in any case it cannot fail to supply a real want in our veterinary literature.

Diagnosis in doubtful cases of Glanders.—There are probably no contagious diseases of animals which, under certain circumstances, presents greater difficulties of diagnosis than those of a glanderous type. The signs of lesion are at times so obscure, and the positive symptoms of so doubtful a character (without referring to the cases in which, though present, it is under a latent form, and baffles the closest observation), that very often the practitioner is disposed to despair of reaching a satisfactory conclusion, until he has placed his patient in a condition of isolation, and subjected him to a long course of observation and experiment. This of course subjects the owners of suspected animals to serious loss and inconvenience, with the superadded possible danger of contagion still existing, and without the advantage which might accrue from the chances of failure of a glanderous development.

The inoculation of other animals and the auto-inoculation of those which are under suspicion have often largely aided in the discovery of the true nature of the discharge which has been found to issue from a diseased gland, when in the absence or oversight of these artificial tests, a total failure might have attended the search for the truth of the case. These favorable results have also been obtained in a variety of cases when other than equine patients have been the subjects. The donkey, the dog, the guinea pig and the rabbit have all furnished their contingents, though the success with the different animals has sometimes varied in its degree.

But aside from this mode of reaching the truth, there is another simple method of obtaining evidence, which is available toward the formation of a positive diagnosis. This consists in noting the results obtained by the culture of the microbe of the real glanderous affection. Glanders being a virulent disease, it is therefore the "function of a living being," as has already been made known by the interesting researches of Bouchard, Loffler and Schutz. Several varieties of cultures of this microbe are already known, but of all these, that which has proved more rapid, simple and powerful than the rest in the hands of Director Nocard is that made with *potatoes*. In a recent communication made by him before the Central Society of Veterinary Medicine, Dr. Nocard declared, "That of all the media used for the culture of the bacillus of glanders, the potato is, beyond doubt, the most precious." And proceeding, he gives the following as the proper method of manipulation: "The potato is first well washed and cleansed without removing the skin, and then placed into a solution of corrosive sublimate, one part to the thousand, where it is kept for one or two hours, in order to destroy all germs on its surface. It is then cut in two and placed in a culture jar and well covered. Steaming these in the boiling water bath for one or two hours, they are thus well cooked and all the germs which may soil them are thus destroyed. Then carefully removing the cover of the culture jar, in order to prevent the introduction of surrounding atmospheric germs, the glanderous (?) products well diluted with distilled or sterilized water, are spread over the potatoes, and the jar carefully closed up. After several days, a great number of colonies of new growth can be observed and recognized by the peculiar brown-yellowish color which they assume, which are characteristic of the glanderous bacilli."

This method of detecting the true nature of the suspected disease, though seeming to be so simple a process, is by no means free from its difficulties, and requires for its successful accomplishment a thorough knowledge and careful manipulation, such as can only be acquired by experience in obtaining cultures of microbes. But it ought, even in the hands of amateur investigators, and certainly in those of observing practitioners, to become a ready means of correct diagnosis, and greatly tend to prevent the ignorant and uncertain attempts of almost daily occurrence in practicing; and would certainly supersede the possibility of the errors so often illustrated in the cases of such "experts" as we occasionally encounter in practice. It was by resorting to this method that Director Nocard on one occasion established the integrity of a diagnosis in a case of suspected human farcy, in which, though the case had been *clinically* demonstrated, it was not certainly established until the culture test was brought into successful requisition.

Fifth International Veterinary Congress.—We made mention of this contemplated event in our last number, but feel that the importance of the occasion amply justifies a further reference to the subject. Too much cannot be said in urging it upon the attention of our readers, nor can they be too often reminded of the interest and magnitude of the expected assemblage. It is with these views, and a desire to furnish our colleagues with all necessary information in the premises that we print on another page a translation of the appeal of the Committee on Organization to the veterinarians of other countries, which has been forwarded to us by that committee, and which, we trust, will meet with a general and hearty response from the profession in the United States.

PAPERS COMPETING FOR THE REVIEW PRIZE.

THE INTIMATE PATHOLOGICAL NATURE OF PARTURIENT APOPLEXY.

EX FACTO JUS ORITUR.

No subject within the province of bovine pathology has elicited so much discussion, or called forth such a diversity of opinion as the essential nature of paturient apoplexy. It does not materially matter what name is applied to a disease, provided such designation clearly expresses some requisite feature or pathological ingredient of the malady. It is an obvious error—and one that might be fraught with dire results—to apply to diseases names which may lead to mistaken conceptions of the morbid process which constitutes the physical basis of the disorder. Practitioners generally accept with too great willingness the nomenclature of disease, and thus names often become substitutes for actual knowledge, and morbid entities escape the grasp of clear conception. This fact suggests the great importance of correctly naming specific morbid states. The highest end of veterinary medicine is rational and scientific therapeutics. Every consideration is subordinate to the consideration of success in treatment, and every piece of exact knowledge regarding the modus operandi of disease increases the veterinarian's power of influencing morbid action.

Undoubtedly, the conception which we form to-day of the pathogenic basis of paturient apoplexy more nearly approximates the truth than did the earlier and cruder conceptions which found expression in the essentially vague phraseology of *paturient apoplexy.* Both physiological and pathological research have contributed much to the elucidation of this otherwise obscure subject. And every additional ray of light has only served to bring into greater prominence the errors which encumbered original hypotheses. What, then, is paturient apoplexy? Formerly, apoplexy was always used to signify the train of phenomena which attend upon sanguineous discharge into the cerebral substance, and parturient apoplexy meant such discharge during the parturient state. There never would, indeed, never could have been any controversy touching the essential nature of this disease had not the march of pathological science brought to light facts which were at variance with received opinions.

The scalpel disclosed this pregnant truth—namely, that the phenomena of the so-called apoplectic condition in the paturient state were not due to what was then understood by apoplexy, viz: a sanguineous discharge into the cerebral substance. With this vital fact clearly demonstrated, it became obvious that even though hemorrhagic extravasation may be present in a case of parturient apoplexy, it by no means furnishes proof that the essential condition upon which the phenomena of the disorder depends is cerebral congestion. It is a mooted question even now with neurologists and pathologists whether actual hemorrhage into the cerebrum can take place without antecedent and concomitant disease in the blood-vessels themselves. MM. Charcot and Bouchard have declared that cerebral hemorrhage almost invariably followed arteritis, and Hammond accepts the same opinion. The liability to cerebral hemorrhage is not diminished by pregnancy, and its occurrence during that, or the parturient state, attended with the phenomena of paturient apoplexy, by no means affords evidence of its connection in a sequential relation with either of the above-named conditions. Some authorities record examples of parturient apoplexy where death ensued, and where post-mortem examination disclosed blood-clots in the brain. Now these cases can have no great importance in their bearing upon the subject, as it is not shown that they were not ordinary cases of cerebral hemorrhage occurring during the parturient period. In the several autopsies we have made in cases where death resulted from well-defined parturient apoplexy, every evidence of congestion was wanting. We may quote here the language of Fleming: "The examination of the brain has not yielded very satisfactory or constant results." Regarding the morbid anatomy of cerebral congestion, Hammond says: "There are certain appearances seen in the brains of those who have died of cerebral congestion which are characteristic." The absence of these is presumptive evidence, at least, of some other morbid condition.

Following close upon the discovery that hemorrhagic extravasation was not always present at post-mortem came a revolution in opinion concerning the intimate nature of parturient apoplexy. Factors not yet recognized were potential in the evolution of the disorder, and the time was now opportune for the growth of hypotheses. These succeeded each other in rapid succession. From the doctrine of congestion, through every shade of changing opinion, passed the professional mind, and even yet there is no definiteness to professional opinion. Franck and Fleming, perhaps, more than any other investigators, have sought to irradiate this special field of bovine pathology. The hypothesis first enunciated by Traube and Rosenberg has been carefully investigated by these distinguished writers on veterinary medicine, and they declare (Fleming's Veterinary Obstetrics, page 668) that "if we consider the conditions which are present at parturition, as well as the symptoms of the disease, we are led to attribute the origin of the latter to an acute anæmia, and consequent sudden loss of brain power." It is true that the anæmia, which is here regarded as the efficient cause of the phenomena, is itself a sequential condition—the antecedent state being one of hyperæmia. The experimental researches of Kussmane and Tenner have shown that cerebral anæmia will induce the phenomena of parturient apoplexy in every grade and degree in which they occur, from simple motor and sense disturbance to the profoundest convulsion. Now here are the phenomena of a disease which arises only during the parturient state in the cow. Rarely is the same group of symptoms seen apart from this condition. Naturally the inquiry arises, What is there in the parturient state of the cow that predisposes her to this disease? The quality of the blood is changed. It is hydræmic. As pregnancy advances the disproportion between the corpuscular elements and the liquor sanguinous increases. The oxidizing properties of the blood are diminished. The physiological law of healthy functioning requires the uniform supply of normal blood. The culmination of the evil tendencies of hydræmia is reached in a well-defined case of parturient apoplexy. But it is not necessary that the entire encephalon shall be involved in the anæmic process for the evolution of a case of parturient apoplexy. Corresponding to the extent and variety of symptomatic expression may be pathological involvement of a part only, or the whole of the cerebral organ. Associated with the general hydræmia may be ischæmia of the brain, and this may involve the sensory tract or the motor tract, or both. But aside from the impoverishment of the blood as a predisposing factor in the disease it must be remembered that the nervous system is greatly exalted in sensibility, and the liability to every form of nervous perturbation correspondingly increased.

MacDonald, in 1878, published the results of some very carefully conducted experimental examinations, and expressed the belief that eclampsia in women was due to irritation of the vasomotor centre in consequence of an anæmic condition of the blood. We will revert to this subject farther on. The form of anæmia which obtains in pregnancy and parturition may be serous or polyæmic, albuminous or hydræmic. Taking, then, the conditions of blood impoverishment and nerve exaltation, in conjunction with increased arterial pressure, we are no longer at a loss for a physiological and scientific explanation of the phenomena of the disease. A greater liability to this disease exists in those cows whose condition is one of arterial fullness, as the pressure of hydræmic blood renders the animal very obnoxious to the disease.

Bidder and Murck have shown experimentally that pressure alone would not induce eclampsia, and that the induction of this condition required blood-impoverishment. It is admitted by all writers that the predisposing elements enumerated in this paper always attend the parturient state. It is only necessary that the exciting factors shall be engrafted upon these to provoke a case of parturient apoplexy. It needs only the torch of irritation to fire into activity the latent embers. This is furnished in the process of active parturition. All physiologists agree that visceral irritations may be potent causes of motor and sensory disturbances in every shade of intensity. Let, for example, the great splanchnic centre receive violent impact and instantly, almost, the transmitted impulse excites the contractile fibres in the brain, and the patient sinks away from sheer cerebral bloodlessness. Let the point of irritation be somewhere in the course of the enteric tract, and similar results will follow. Other things being equal, the degree of irritation determines the extent of morbid manifestation. In chronic diseases affecting any organ remote from the encephalon, the irritation is slowly carried along the afferent nerves until the great centres are reached, and then the work of general retrogression goes rapidly forward. Now parturition is not a chronic process, but it makes up in intensity of action for length of time. It may be likened to violence, and the whole nervous system feels the force of the energetic action.

As pointed out by MacDonald, it is not until the deep-seated nerve centres are implicated in the irritation that that profound degree of anæmia takes place, which leads to unmistakable symptomatic pictures. We are aware that this anæmic view of the pathology of parturient apoplexy is not generally received. Indeed, it has never challenged the consideration its importance demands. In human medicine it has revolutionized opinion and practice, and the veterinary profession should not be many steps behind their fellows in the higher science and art.

It is impossible at the present time to set a limit to the influence of peripheral irritation in inducing morbid states, by reflex action, in remote parts of the animal organism. In support of the view here maintained, we may quote a brief passage in illustration of the influence of irritation in exciting morbid conditions. He says (Diseases of the Nervous System, page 880): "a painful sensation starting from the testicle leads, at first, to a contraction of the muscular tissue of the scrotum, with retraction of the testicles. When this pain reaches a sufficient degree of intensity, the walls of the abdomen and of the several hollow viscera contained in the abdominal cavity, enter also into contraction. There may even be developed general convulsions, the result, doubtless, of the reflex contraction of the vessels of the nervous centres, and of the olighemia resulting therefrom."

The experiments of Gœtz demonstrated that violent impact against the belly of a frog produced sudden anæmia of the brain, and determination of the volume of blood to the abdominal cavity. The same observation can be made by any veterinarian. The influence of irritation in exciting spasm of small vessels by excitation of the vaso-motor centres which enervate their walls, finds a happy illustration in the symmetrical gangrene of M. Maurice Reynaud. The initial irritation may be anywhere remote from the affected parts, but the excitation will be transmitted to the bulb, and thence reflected to the extremities.

To-day the question of anæmia as the basic element in parturient apoplexy is only beginning to attract the attention of veterinarians. The more rigidly the matter is looked into, the stronger will grow the conviction that the old theories regarding cerebral congestion are not adequate to a rational exposition of the disorder under consideration. A glance at the mortality rate of parturient apoplexy is sufficient to convince even a novice that our means of controlling the disease either are impotent or that we are in ignorance regarding the pathological condition that we wish to combat.

According to Franck, Saint Cyr and Stockfleth, the mortality rate ranges from forty per cent. to fifty per cent. Such a death rate is proof that we have not learned yet how to treat the disease successfully. But it will be found that where plans of treatment are instituted upon the theory of a brain anæmia as the underlying causal factor, this rate is materially lessened. The indications for treatment are two-fold. The great central nerve organ—the brain—must be furnished with a sufficiency of blood by proper treatment, and the local irritation in and about the generative organs must be allayed. For the purposes of successful management, this latter indication possesses equal importance with the first. The therapeutics of this disease, as outlined in text-books, is mainly a marshalling of therapeutic illusions, and the practitioner who "treats by the book" will reap bitter fruit for his labor.

ORIGINAL ARTICLES.

MEDIATE CONTAGION IN PLEURO-PNEUMONIA.

By D. E. Salmon, D.V.M., Chief of the Bnreau of Animal Industy.

(Read at the Meeting of the U. S. V. M. Association.)

In the fall of 1886 Dr. Gadsden was in Illinois and preached the gospel of mediate contagion with such enthusiasm that he converted the State Live Stock Commission, and persuaded them to force the issue with the Bureau of Animal Industry, as to whether the disinfection of premises where diseased cattle had been was a necessary precaution against this contagion. A controversy was started in this way which is not yet finished. The doctor and his disciples have carried their case into the daily and weekly newspapers, and seem to consider it a most remarkable feat when they have succeeded in convincing people who under no circumstances have an opportunity of hearing the other side of the case, and who from total lack of scientific training would be incapable of reaching a logical conclusion if they had all the facts before them. The propagation of these erratic views, which under no circumstances can make the measures adopted against pleuro-pneumonia more thorough or hasten the time when the disease will be eradicated, have done much to cause distrust of veterinary counsel and to impede the progress of the work.

Some of you will doubtless remember that at the meeting of this Association at Philadelphia about a year ago, I asked for an expression of opinion on the theory of mediate contagion and on the necessity for disinfection. If I remember correctly, there was no voice raised at that time in support of the theory that pleuro-pneumonia can only be propagated by contact with the living diseased animal, and there was a unanimity of opinion in favor of disinfection.

Dr. Gadsden was not willing to leave the decision of this question to veterinarians, but prepared a case, like a lawyer would prepare a brief, giving those observations which apparently upheld his theory and suppressing those which demonstrated that the contrary was true. He even wrote to such men as Williams, McCall and Stevenson, who have long been known as supporters of this strange proposition, for their views, and in that way was able to show that nearly all the professional men whom he had heard from were believers in the necessity of contact with the living diseased animal.

With this one-sided paper, the doctor went to the Kansas City convention of stock-growers to elucidate, for the benefit of these non-professional men, one of the most important questions to be considered in adopting measures for the eradication of the most insidious of all animal plagues. His object was not to show that the work now done was not sufficiently thorough and to gain support for more stringent measures, but on the contrary he desired to prove that it was too thorough and that a part of it should be left undone. It is seldom that one finds a professional man occupying such a position, for usually they prefer to err on the safe side and carry out the most stringent measures that are possible.

As it happened, however, the programme of this convention had been prepared some weeks in advance of the meeting, the parties who were to read papers were invited to prepare them on particular subjects, and no other papers whatever were accepted. Dr. Gadsden's paper was ruled out on this account, and he was advised to read it at the meeting of veterinarians and State Live Stock Sanitary Boards, then in progress, where it could be intelligently discussed.

Apparently not pleased by this decision, the doctor sent his paper to various newspapers with a letter, to some parts of which I must take exceptions. "I was very much surprised," he says, "to find the convention run by a certain clique in the interests of the Bureau of Animal Industry." I would like to ask if that is not a remarkable statement in view of the fact that the most important resolution passed by that convention favored legislation to take the entire pleuro-pneumonia work away from the Bureau and place it with an independent commission? "And its business controlled by a committee, one of whom was Dr. Salmon, the head of that Bureau." Yes, I was a member of a committee of five on order of business, but I do not see any particular reason for surprise in that fact, as I was a regularly appointed delegate.

"Unfortunately," he goes on, "the *facts* that I had gathered did not agree with the theories of Dr. Salmon, and my paper and the accompanying correspondence met an ignominious fate in this committee of censors, there suffering strangulation." The doctor is not correct in this statement; his paper was simply declined as were all others that were not prepared by invitation of the executive committee. The convention had certain work to do and it had no time to go out of its way to discuss a question of detail in the scientific work for the eradication of disease. So much by way of introduction.

I desire to show now that I am not afraid to meet the doctor's facts in a fair discussion before a professional audience.

He begins as follows: "It seems hardly necessary to say that pleuro-pneumonia or lung-plague in cattle is incurable and highly contagious; but the result of careful research and the experience of years shows that the contagion can only be communicated by contact with the living diseased animal. The disease is so insidious that it has only been after the most careful and thorough tests that this decision could be arrived at."

Is this one of the facts which the doctor referred to in his letter? If so, I must respectfully but firmly object to it. The experience of years has shown nothing of the kind but, on the contrary, cases are recorded from the beginning of intelligent observation of lung-plague to the present time, which show conclusively that contact with the living diseased animal is not necessary for the contraction of the disease. So with experiments—some have given negative results and some positive results, the same as do all experiments in every department of science. In chemistry every experiment does not succeed even when we think it ought. But you cannot build up a science upon the negative results of experiments; it is the positive results which are accepted, and with reason. A negative result is nothing, it is a zero, a cypher, and you may add together a hundred or a thousand cyphers and you get what? Nothing. But when you get positive results you have something tangible, and if you can repeat them a reasonable number of times it is a demonstration. With this question, however, a few gentlemen have built up a theory on negatives, they have scrupulously discarded all positive results and have apparently convinced themselves at last that they have in this peculiar way demonstrated their hypothesis and that it is no longer a theory but a fact. If they are reposing with dreams that the world at large has accepted their conclusion, they are destined to a rude awakening, for they stand to the other members of the profession in some such proportion as the three tailors of Tooley street to the people of England.

Dr. Gadsden continues: "In Pennsylvania, the State that I have the honor to represent, Dr. Francis Bridge has possibly had as large an experience in this disease as any person in the United States. In frequent conversations and in letters hereto appended, he states most unqualifiedly that the disease can only be communicated by contact with the living diseased animal." Very well, Dr. Bridge also believes that it is impossible for an animal affected with chronic pleuro-pneumonia to disseminate the disease. Dr. Gadsden, on the other hand, believes such animals to be very frequent sources of the plague. Dr. Bridge's observations with chronic cases have been equally extensive with his observations on the subject of mediate contagion. Why not accept his views on the one as well as the other? What a relief it would be in the work of stamping out this treacherous malady to be able to overlook chronic cases and infected premises with impunity!

The doctor's case is rested principally, however, upon the so-called experiment with the Shufeldt distillery stables in Chicago. He says: "But perhaps the most conclusive test, and the one on the largest scale, was made in the city of Chicago, at the sheds of the Shufeldt distillery. These sheds had been occupied with cattle affected with pleuro-pneumonia, 455 out of 497 being found diseased; and the last ones were slaughtered on December 10,

1886. Messrs. Shufeldt & Co. were anxious to refill their sheds and made application to the State Live Stock Commissioners for permission to do so. Having been called upon, I gave my opinion that this would be entirely safe, providing the animals brought in were perfectly healthy."

Dr. Gadsden appears in this paper to have overlooked another condition which he made at the time, viz., that the stables should be thoroughly disinfected. It is a very serious omission, and one which must have great influence on our opinion as to the value of the test.

"Upon Mr. Shufeldt's guaranteeing this (the healthfulness of the animals), the Commissioners gave the necessary permit and on December 18, 1886, 894 fresh healthy cattle were brought in and kept under strict quarantine until the time of slaughter, which was during June and July, 1887. Each animal was carefully inspected and a post-mortem examination made by Dr. Casewell State Veterinarian, a man thoroughly familiar with the disease, its symptoms and characteristics. He reported that these animals were all found free of any taint of pleuro-pneumonia.

"Although these sheds stood empty for a time and were partially disinfected, the flooring was not removed and the mangers and fixtures remained, the only essential precaution insisted upon being that none but absolutely healthy cattle should be introduced.

"The experience in this case was not a singular one, and though I was looked upon as bordering upon rashness in giving this opinion, yet from my own experience of many years and the testimony of those in whom I have unbounded confidence, I felt assured that I was right and the result has proved the correctness of the opinion."

That is Dr. Gadsden's case as made out in favor of immediate contagion alone in pleuro-pneumonia. This so-called test at the Shufeldt distillery stables has been widely heralded as conclusive on the subject and is therefore worthy of closer investigation. As a test of mediate contagion its value must depend entirely upon the character of the disinfection. If this was thorough the virus must have been destroyed and there could have been no opportunity to test its preservation and ability to produce disease.

This important factor is almost entirely lost sight of in the paper in question. In all of the work of the Bureau of Animal Industry we rely upon disinfection to destroy the contagion in stables and, consequently, as soon as a disinfectant has been scattered about a stable, the conditions for a reliable experiment on mediate contagion are destroyed. The disinfection might not have been thorough, but there is no way to tell just the degree of its action, and, consequently, if no disease follows under such circumstances you do not know whether to attribute this to the disinfection or to some other cause. Hence the problem is complicated, and the results are unreliable as tests of this question.

The thoroughness of the disinfection in the Shufeldt stables is a much debated question and one that probably will never be settled. The owners claimed that the stable was frequently flooded with water and then well washed with carbolic acid and lime water.

Prof. Law, who looked into this case quite thoroughly, said: "The disinfection of the Shufeldt stables was not exactly a model for other disinfectors, but it proved nevertheless to be thorough. A small portion of the stables was not even washed with the chloride of lime solution. But the great extent of adjacent low-roofed sheds well saturated with the chloride kept the whole air, even in the unwashed portion, charged with chlorine and chlorine compounds, which not only penetrated into the interior of every porous substance, but was inhaled day and night by the cattle afterward placed in the sheds."

My own opinion is that the extremely cold weather had something to do with freeing these stables from the contagion. There are some kinds of contagion which do not resist freezing, but no experiments, so far as I know, have been made with pleuro-pneumonia virus to settle this question. But I cannot go into the matter more in detail—the question is, can we accept as a test of this question the negative results which follow from putting cattle into a shed which has been vacated in the dead of a Chicago winter and in which disinfectants have been used? I certainly should reject such an experiment as absolutely worthless.

Turning now to the other aspect of the question, let us see what there is to show the spread of this plague by mediate contagion. Dr. F. M. Röll says in his Thierseuchen:

"The contagion can be spread by different and especially by porous objects, as by clothing worn by persons attending to diseased animals, by blankets used about such animals, by stable utensils of different kinds, by animals that have been sheltered in infected stables, by straw, hay, etc., which has been stored in such stables. The tenacity of the plague is very great and it can be preserved even for months under favorable circumstances, as experiments have shown. Lydtin (thierarz mitth, xi) cites a case of the introduction of infection by the cooled meat and lung parts of a diseased cow, which had been killed three or four days before. Twenty-five days after taking these parts into the stable a cow became sick, and at the autopsy it was demonstrated to be lung plague. A few days later a second cow, and shortly after a third one became affected with the disease."

Beeker remarks that the emanation from a burial pit in which the carcasses of some pleuro-pneumonia heifers were buried three months before, had caused the development of the disease in other cattle.

It has been repeatedly proved that cattle which were kept in stables in which some months before animals had died of pleuro-pneumonia and which stables had not been disinfected, have contracted the disease. Cases are frequently reported in which the disease has been awakened after months by hay, straw and manure, which were contaminated by the secretions of affected cattle.

Dictionnaire de Médecine de Chir. et d'Hygiene Vétérinaires, par Hurtrel D'Arboval—rewritten by A. Zundel. Vol. III, p. 93:

"This volatile virus is found above all in the breath of the animals, and this is why the disease is easily carried by people who have been in contact with sick beasts and whose clothes are impregnated with the emanations of the animals, by cow dealers, butchers and quacks. It has been carried by healthy animals which had cohabited with the sick ones and which appeared themselves refractory to the disease; it has been observed to be carried in this way by horses. It has been communicated by hay, straw, manure, impregnated with the products of the exhalations. The cases where these matters have preserved the virus during three or four months are not rare, and Furstenberg cites unequivocal cases where hay, obtained from a stable where there had been pleuro-pneumonia and given to fresh animals, has still communicated the disease after nine months. A stable which has been inhabited by one or several pleuro-pneumonia animals, a railroad car which has served to transport sick ones, preserves the virus for a very long time, and the cases are not rare where cattle put into a stable where there had been pleuro-pneumonia, have contracted the disease three or four months afterwards, if care had not been taken to thoroughly disinfect it."

Galtier in his Traité des Maladies Contagieuse et de la Police Sanitaire des Animaux Domestique, makes statements of the same kind.

Dr. Mehenkel, in his report on the Etat Sanitaire des Animaux Domestiques for Belgium, for the year 1881, says, p. 43:

"A statement which seems to us equally worthy of being mentioned in the present resume is found in one of the reports of V. Laridon, of Thonront. This estimable practitioner saw the disease appear among the animals of an isolated farm; nothing could have brought here the germ of the disease. Laridon thinks that this outbreak of pleuro-pneumonia must be attributed to opening a pit where three years before cattle affected with pleuro-pneumonia had been buried."

I have had cases reported to me in Brooklyn where the disease was started up afresh after the herd had been free from it for three or four years, by digging up the accumulations under the old stable floors.

Fleming and Williams both say disinfection is necessary.

Dr. Law, in his monograph on lung plague, gives a large number of instances where the disease was spread by mediate contagion. I will not take up your time with these now. Dr. Law found an unequivocal case of this kind during his work in Chicago. On May 12, 1887, a cow at the rendering platform was found on post-mortem to have died of acute lung plague. She came from Dexter avenue, between Wood and Lincoln streets, and belonged to Patrick Kane. This cow had been kept alone in a stable, between the south branch of Chicago river and the canal. There is only a narrow strip of land at this place and but very few cows are on it. Thorough and repeated inspections of all the cows on this strip of land failed to discover any further evidences of the disease. No other affected cattle were there. A search through the books showed that a cow previously kept in that stable had died of acute lung plague on March 18, 1887, and owing to the lack of co-operation at that time, and the conversion of the State Commission to Dr. Gadsden's theory, the stable was not disinfected. A new cow was taken in from the stock-yards and it was this one which contracted pleuro-pneumonia and died.

I saw an equally satisfactory case of mediate contagion at Peoria in 1884. The plague was taken to that city by some cows purchased by Mr. Tripp at a sale at Virginia, Ill., on February 21. These cows mixed with diseased animals at Virginia, and one of them sickened about April 1. She was in a herd of thoroughbred Jerseys, and the only other herd which became affected in that locality was also a herd of Jerseys, located seven or eight miles from the first one, and belonged to Mr. Bailey. Now the animals in these two herds had certainly not been within half a mile of each other, and only one of them could have been that near. That one had been for a few weeks at the owner's stable in the city, where she had been kept to supply the family with milk. This was at the time the first cases appeared in the other herd. The nature of the plague was not recognized and the local veterinarians incautiously went from the pleuro-pneumonia cases at Tripp's stable to treat Bailey's cow for a slight attack of indigestion. A month later Bailey's cow was taken to his farm, seven miles away, but it was not until a second month had elapsed that she showed signs of lung disease. From her the disease extended, and was not eradicated until every animal in the herd was destroyed, although every effort was made to check its progress by promptly isolating the sick and by disinfection.

In the report of the Bureau of Animal Industry for 1885 (pp. 121 and 122), I have collected a number of cases where outbreaks of pleuro-pneumonia were started in uninfected herds by the practice of inoculation. These certainly are cases of mediate contagion.

But why stop to quote cases? They are innumerable. There is scarcely a man who has had a large experience with pleuro-pneumonia but that has seen equally satisfactory cases, and many others which indicated if they did not prove the dissemination of the plague by mediate contagion.

So much for the facts. Let us turn for a moment to the theory and inquire how this doctrine of contagion by contact with the living diseased animal only can be explained. How does the living diseased animal communicate the contagion? Evidently by means of the expired air. This expired air, then, must be charged with the germs of the disease, and it becomes so charged by coming in contact with the infectious matter formed in the lungs. Suppose this air is expired into a close, badly ventilated stable, the whole air in that stable becomes charged, does it not? We know from experience that in such a case the contagion may skip a dozen or twenty cows to infect the farthest one in the row. This demonstrates that the contagion is held in the air for an appreciable time and may be carried some distance in such a building and still be able to infect. How long is it held in the atmosphere? One minute, or ten minutes, or an hour? Who can answer? Will any one say it cannot be thus suspended one minute or ten minutes without losing its infective properties? And yet the advocates of this strange theory will tell you that if the sick cow is taken out of such a stable, and a susceptible healthy animal introduced only a second afterwards, the fresh cow is perfectly safe! The disease can only be contracted from contact with the living diseased animal.

They will also tell you that although the air expired by the living diseased animal contains the germs of contagion, you may take the warm and steaming lungs from a freshly killed animal and allow other cattle to breathe the exhalations, and the residual air which they contain, with impunity, and that disease cannot be produced in that way. It does not appear to me that these statements are consistent with each other.

Dr. Gadsden quotes the letter of Prof. Axe to show that the contagion of lung plague is peculiarly unstable, and yet no one has insisted more strongly on the peculiar stability of this virus than has Dr. Gadsden himself, in his papers on the danger from chronic cases. If chronic cases are dangerous for six, twelve or eighteen months, then the virus is peculiarly stable. If in such cases it continues to exist inside of the cyst, shut off completely from the living tissues of the body, then we must admit that it would exist as well in the cyst, if this were taken out of the animal and maintained under the same conditions of warmth and moisture. And if the breaking of a cyst inside the lungs liberates the contagion and allows it to disseminate into the air with which it comes in contact, why would not the breaking of a cyst outside of the body, where it is in much freer contact with the air, produce a like result? Why would not this infectious material, if dried, pulverized, mixed with the air and inhaled, produce the disease?

The indications are that this virus is not peculiarly unstable. The practice of inoculation has demonstrated for us that the serum from the lungs retains its infecting properties for a considerable time, and if putrefaction is prevented by the addition of salt or glycerine, it produces the typical effect in inoculations after weeks or even months. If it produces the lesions of the plague in the tail after that time, why would it not do so in the lungs if by any chance it reached them?

So far as I can see the facts are all against this theory that cohabitation is necessary for the propagation of pleuro-pneumonia. But the facts are discarded and a theory has been built up on negative evidence alone. Is that science? Is it a safe foundation on which to base our measures of eradication? I believe not, and I demand better evidence before I stop disinfection and permit new herds to be placed in stables after infected ones have been removed.

DISEASES OF THE SKIN AMONG DOMESTICATED ANIMALS.

By George Muller, Ph.D., Docent in the Royal Veterinary School of Munich.

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(*Continued from page* 41.)

II.—Parasitic Skin Diseases.

a.—*Caused by Vegetable Parasites.*

10.—Alopecia.

Our domestic animals not uncommonly suffer from partial or complete loss of hair, wool, or bristles where attacked by various local or general diseases. We may designate the malady alopecia symptomatica. Alopecias not thus dependent upon other maladies are, however, rare.

The condition is seen most frequently in dogs and horses, and appears as circumscribed or more extended bald spots, which gradually increase in size until they may involve the greater part of the skin. In the dog the back, tail, and thighs are most liable to be affected.

Besides the atrophy of the hairs and the hair sacs, we find pigmentary infiltration of the upper layers of the skin, especially of the cells of the rete Malpighi, of the rootsheaths and of the epithelium cells of the sebaceous glands (Siedamgrotzsky, Röll.)

Opinions are yet divided concerning the *etiology.* Some consider alopecia to be caused by atrophy of the cutaneous nerves, while others seek an explanation of the disease in the presence of vegetable parasites. Nevertheless it has not yet been possible to convey the disease by inoculation.

Treatment is useless and superfluous. It is superfluous because spontaneous cure occurs sooner or later; and it is useless because all remedies thus far tried have proven valueless. Amongst those that have been tested are the fatty and etherial oils, alcohols, balsam of Peru, cantharides, sulphur ointment, chrysarobin ointment, tar preparations, sublimate solutions and tincture of iodine.

11.—Favus.

The Achorion Schönleinii causes in dogs, cats, horses (rarely), mice and chickens a skin disease which is variously known as favus, tinea favosa, tinea vera, erbgrind and wabengrind. The fungus can be transferred from these animals to man, and the reverse. The favus of dogs, cats, horses, rabbits and mice is also transferable from one animal to another; but it has not yet been possible to inoculate other animals with the favus of chickens, or with pure cultures of the same (Gerlach, Schütz.)

Achorion Schœnleinii forms a thick network of branching hyphæ, amongst which we find round conidiæ, either scattered or en masse. The fungus can penetrate between the epidermic cells into the cuticle, the root sheaths of the hairs and even up into the hairs and feathers.

In mammals the favus eruption is especially liable to be seen on the forehead, alæ nasi, behind the ears, on the abdomen and the outer surface of the hind limbs. It appears as yellowish-white or sulphur colored, dry, mortar-like crusts. At first they are hardly as large as a pin's head; but they gradually increase in size until they may attain a diameter equal to that of a ten cent piece and a thickness of 2–5 mm.

They form round or elliptical, often concentrically ringed plates, the external surface of which is depressed centrally, giving it a cup shape. The dull and lusterless hairs that at first penetrate the crust soon fall out.

Under the crust we find a depression in the skin, covered with a vividly red epidermis. As a rule a little hemorrhage follows the removal of the cup.

In fowls favus appears most commonly on the comb. There appear small, dingy white cup-shaped crusts, which, growing peripherally, gradually cover the entire comb. The eruption increases slowly at first, but later spreads more rapidly; and finally it may cover the head, neck and even the entire body of the animal. The feathers become dry and brittle, and eventually fall out; the animals lose flesh and finally perish of exhaustion.

Treatment consists in the removal of the scutulæ and the application of parasiticide remedies. Of these the most efficacious are solutions of carbolic acid or creosote (1:10), red or white mercurial ointment, sublimate solutions (1:50–100), benzine ointment (1:4), tincture of iodine and pyrogallic acid ointment (1:10.)

12.—Herpes tonsurans.

Trichophyton tonsurans grows frequently upon the skin of cattle and dogs, more rarely upon that of horses, goats and cats, and least commonly upon that of sheep and pigs. It causes a malady that is variously known as herpes tonsurans, tinea decalvans, tinea tonsurans, porrigo decalvans, ring-worm, borkenflechté, glatzflechte, teigmaul, teiggrind, etc. It is transmissible from animal to animal, and from animal to man. On rabbits it grows only after direct inoculation.

The fungus consists of filaments which branch but sparingly, and of conidiæ possessed of great powers of resistence, and usually arranged in chains. Its favorite location is between the hair and the root sheath; but it soon penetrates into the epidermic cells and inside the hair itself, so that the central canal often shows large collections of spores.

The mycelium and conidiæ may vary considerably in size; so much so that Mégnin has described two species, a *Trichophyton tonsurans* of the horse, cat and dog; and a *Trichophyton epilans* of cattle. He differentiates these not only by the different sizes of the spores, but also by the fact that trichophyton epilans is much more difficult to transplant to horses' skins and is much more intractable than is the other variety.

Zürn describes the appearance of herpes tonsurans as follows: "The eruption shows itself as small, round, lentil to dollar-sized, partially or completely bald, sharply limited spots, often placed side by side at regular intervals or, more rarely, confluent. Confluent spots are seen most frequently in cattle, less often in the dog and the horse. The affected spots themselves are covered by greyish-white, asbestos-like scales; older cases showing doughy, yellowish-grey or brown, or even brownish-red, leathery scales. These form thick crusts, which are often 2–8 mm. in thickness, in which the hairs, loosened from their follicles, are found entangled." When these crusts fall off, or are artificially removed, there appears a suppurating surface, which heals spontaneously. Marked itching is always present. The eruption usually appears first on the head and neck in cattle, and on the middle of the back in horses, and it spreads thence further over the body.

The *therapy* of the disease is analagous to that of favus. The scales and crusts are to be removed with the aid of sapo viridis, and then anti-parasitic remedies are to be applied. Especially serviceable are the tar preparations, carbolic acid, creosote (1:20), white, red and grey mercurial ointments, sublimate solution (1:50–100), photogen with oil (1:4), naphthol ointment (1:10), naphtholin ointment, thymol solution, chrysarobin ointment (1:10), and tincture of iodine.

13.—Dermatitis Canadensis.

In the year 1879 Axe described a skin disease prevalent amongst horses in England, under the name of dermatitis contagiosa canadensis pustulosa. It was seen later in Germany, where it was also designated impetigo contagiosa (Schinkelda, Burke), acne contagiosa (Dieckerhoff, Grawitz), English or Canadian horse-pox.

The malady is certainly mycotic in its nature, for not only has it been possible to vaccinate the purulent secretion upon horses, goats and rabbits (Siedamgrotsky), but a very small bacillus has been gotten pure from the virus, and the cultures have been successfully inoculated upon horses, cattle, sheep, dogs and rabbits (Dierckerhoff and Grawitz.)

According to Schinkelda, the symptoms of dermatitis canadensis are as follows: After an incubation of six to fourteen days the hairs on various places, and most frequently upon the back, appears rough, and on careful observation there can be seen pea to bean-sized vesicles, unaccompanied by itching, and filled with a watery serum, which later becomes purulent. As a rule the vesicles rupture in a few days and their contents dry up into thick, honey like crusts. These fall off, together with the hairs, in six to seven days, and leave behind rounded, pigmented and bald spots, covered with normal epidermis and never desquamating.

Usually this ends the matter. But sometimes new vesicles appear in the neighborhood of the old efflorescences, and the constant and successive relapses may make the course of the disease a very tedious one.

The general health remains entirely undisturbed. There almost always occurs at some time during the disease swelling of the larnyx and the upper lymphatic glands of the neck; but it disappears in a short time.

Schinkelda believes that this dermatitis canadensis is almost the same thing as the impetigo parasitica (Kaposi) of man; but he unfortunately did not attempt to transfer the malady from the horse to the human being.

Treatment is usually needless; obstinate cases may have their course shortened by anti-zymotic remedies, sublimate solution, carbolic acid solution, sol. alum. acet. (7%), (plumbi acct. 2, alumen 2, ag. 50 Dieckerhoff), boracic acid ointment, etc.

Schinkelda tried spiritus sapon. kalin., which Kaposi had successfully employed in impetigo parasitica. But the remedy did not fulfill the expectations; it neither shortened the course of the efflorescences nor prevented relapses.

It is needless to say that spreading by contagion must be prevented.

14.—STOMATITIS PUSTULOSA CONTAGIOSA.

Eggeling and Ellenberger gave this name in 1878 to a pustular exanthem which appears in horses upon the buccal mucous membrane, and especially upon the lips, the gums and the sides and point of the tongue. It soon spreads thence to the parts around the mouth, and it may affect the nasal mucous membrane and even the conjunctiva.

It is so contagious for horses that frequently mere contact with the affected animal suffices to spread it; and it may be transmitted to cattle, sheep, pigs, fowls and human beings by inoculation of the crusts and the buccal secretion. Evidence of its communicability to human kind has recently been submitted by Holst and Gresswell. In the cases of the latter observer, the grooms that tended two horses suffering from d. pustulosa contagiosa inoculated themselves through certain small lesions upon the hands. There occurred considerable swelling of the affected members, with the formation of pustules and sores, and there was high fever, salivation and dysphagia. Recovery occurred without difficulty.

The symptoms in the horse are as follows: After a stage of incubation lasting 2–4 days, there occurs, accompanied by moderate fever, an increased redness and heat of the mucous membrane of the mouth. At the places above mentioned there appear lentil to pea-sized nodules, at first singly and then in larger numbers. These soon become pustules, and when the pustules burst they leave behind roundish, shallow ulcers, with red and shiny granulating bases and yellowish-white edges.

According to Eggeling–Ellenberger, there occurs an inflammatory affection of the capillary body with swelling and small-celled infiltration. The little nodule thus formed breaks up into pus, the papillæ are destroyed, the cuticle ruptures and finally we have a sore with inflammatory and infiltrated margins. The ulcer heals by granulation of the base and new epithelium formation from the edges.

The development of the nodules and their transformation into pustules and ulcers occurs so rapidly that in most cases the mucous membrane appears sown with ulcers four days after the commencement of the disease. During the next four days the ulcers enlarge and occasionally become confluent; and they slowly heal in four to eight days thereafter.

Very frequently similar lesions occur upon the skin of the lips, cheeks, alæ nasi and, in exceptional cases, upon more distant portions of the body. Then also occur inflammatory swellings of neighboring lymphatic glands (especially the submaxillary) and usually inflammation of the nasal and conjunctival mucous membrane.

The malady is benign in its course, and needs no special treatment. Of course affected individuals must be isolated.

b.—*Caused by Animal Parasites.*

15.—Scabies.

There are three varieties of insects which cause in our domesticated animals the affection known as the *itch*.

These are:

1. *Sarcoptes*, Grabmilben—0.2–0.5 mm. long, and 0.2–0.3 mm. broad, crab-like creatures with horseshoe-shaped heads, well developed curved jaws, whose halves interlock from above downwards, short stumpy feet, and tulip-shaped suckers. The male

has these suckers on the first, second and fourth, and the female upon the first and second pairs of feet.

The parasites burrow into the succulent layers of the stratum mucosum, and derive their nourishment from its cells. *They are communicable to man*, and may cause the itch.

Of these sarcoptous insects we have:

Sarcoptes scabiei, found in the skin of man, horses, Neapolitan sheep, and lions.

Sarcoptes squamiferous, found in the skin of dogs, pigs, sheep, goats, and probably men (Zürn.)

Sarcoptes minor, found in the skin of cats and rabbits.

A tendency has been apparent lately to unite sarcoptes scabiei and sarcoptes squamiferous in a single species under the name of *sarcoptes scabiei communis*. And, in fact, the points of difference between S. scabici and S. squamiferous are not important, and certainly are not constant (Zürn, Johne.)

2. *Dermatocoptes*, Saugmilben, 0.5–0.8 mm. long, 0.3–0.5 mm. broad, have a body whose dorsal surface is covered with hairs and spines, a long head, long prominent jaws and tulip-shaped sucking disks upon the ends of all four pairs of feet in the male and on the first, second and fourth pairs in the female.

They live upon the cutaneous surface, especially where the hairs are thick, *without burrowing into the skin*. They obtain nutriment by sucking, by means of their mouth apparatus, fluid from the rete malphigi and the lower layers of the cuticle. *They cannot cause the itch in the human skin.*

Of Dermatocoptes we have:

Dermatocoptes communis, found in horses, cattle and sheep.

Dermatocoptes cuniculi, found in the external auditory passages of the rabbit.

3. *Dermatophagus*, Schuppenfressendemilben, 0.3–0.5 mm. long, 0.2–0.3 mm. broad, with bluntly-pointed head, two scissor-shaped jaws, long feet and cylindrical sucking discs, found in the male upon all four pairs, and in the female in the first, second and fourth pairs. The male also has posteriorly two other bodies, each one formed of two bristles and a sword-shaped chitinous body; and the female has two cylindrical processes and a few bristles at the same place.

They live only upon the surface of the skin, and feed upon the young epidermic cells, destroying the cuticle and the hairs.

Transferred to human skin the dermatophagus soon perishes, causing at most a slight, ephemeral eruption and never the itch.

Here belong:

Dermatophagus equi et bovis, causing a local eruption in horses and cattle (Fussräude, Steifsräude.)

Dermatophagus ovis, causing fussraude of sheep.

Dermatophagus felis, canis et cuniculi, causing ear-itch.

Thus there occurs in the horse:

1. *Sarcoptes itch*, which may spread over the entire body, but is especially common upon head, neck and shoulders. It appears as small circumscribed spots, which soon become bald; these gradually enlarge and may become very considerable in size. Careful examination reveals small, usually isolated nodules, which soon either become vesicular and burst, or allow a thick, sticky fluid to transude. After a while they dry up into brownish crusts. There is also an active desquamation of the epidermis. Itching is always marked, and the vigorous rubbing and scouring causes superficial or deeper lesions of the skin, and inflammatory processes of the most varied kinds.

2. *Dermatocoptes itch.* This begins on the mane, tail, over the larynx, on the flanks, the inner surfaces of the thigh, in short on those portions of the body that are protected by long hairs. It appears as grouped nodules, from which a sticky fluid trickles, which soon dries up into thick, yellowish-brown scales and crusts. As a rule the bald affected spots are sharply divided from the normal skin. The further changes occur from the rubbing and scouring caused by the intense itching.

3. *Dermatophagus itch.* This is localized on the legs and is seldom seen above the knee. It causes considerable itching, especially at night, giving rise to energetic stamping, gnawing and rubbing. Finally there occurs desquamation of the epidermis, loss of hair, the formation of crusts and thickening of the skin.

But dermatophagus may exist upon the extremities without causing any eruption at all (Johne.)

In cattle there occurs:

1. *Dermatocoptes itch.* This begins at the side of the neck and the root of the tail, and spreads later to the back, breast and shoulders. Small nodules appear, accompanied by intense itching, and a fluid transudes which soon dries up into greyish-brown, dry crusts. The hair falls out and the skin finally becomes thickened, leathery and folded.

2. *Dermatophagus itch* (Steifsräude.) At the root of the tail and the ischial fossæ, crusting and falling of the hair occurs, accompanied with itching. In rare instances the eruption spreads into the posterior surface of the legs, back and neck.

In the sheep there occurs:

1. *Dermatocoptes itch*, the most important form of the malady in this animal. This is the common sheep itch, which appears upon all portions of the body that are covered with wool. The itching is very intense. Small yellowish papilles appear among the long hair, and soon develop into vesicles and pustules. They finally rupture and dry up into yellowish-brown crusts. There is also active epithelial desquamation. The wool of the affected area loses color and becomes loosened; but it is retained in place long after, from the matting together of the fibres by the sticky and hardened lymph.

Finally, we find extensive bald, thickened and plicated areas of skin, with cracks and fissures.

2. *Sarcoptes itch* causes a fairly harmless skin eruption. In merino sheep it only spreads over the parts of the head not covered with wool; whilst in sheep whose wool does not contain fat (Neapolitan and others), it may gradually spread over the entire body. It is usually pruriginous, and leads to the formation of firmly adherent crusts, 0.5–1 cm. thick.

3. *Dermatophagus itch.* This "foot itch" begins on the feet (Kötengrind), and may finally involve the entire extremity and the scrotum or udder. It is characterized by itching, moderate redness, desquamation of the epidermis and the formation of yellowish-white crusts.

The *sarcoptes itch* occurs in the goat, and it is said by Walraff to be easily communicable to man, at first on the head and later on other portions. After a papular stage there appear bald spots covered with greyish scales and yellowish or blueish-grey fishscale-like crusts. There is much itching. The skin is wrinkled and thickened between the crusts.

In the pig the itch appears as the *sarcoptes itch.* It is first seen on the skin of the cheeks, the back and the inner surface of the legs, and spreads then over the entire body. These gradually form whitish-grey crusts, 5–10 mm. thick, which give the animal a peculiar fungoid appearance. The bristles fall out and the skin is thickened acd wrinkled.

In the dog we have:

1. *Sarcoptes itch.* Here the head, belly, root of the tail, prepuce are especially liable to be affected. There appear small red macules, which become papulæ and vesicular and sometimes even pustular. These then dry up into greyish-yellow crusts. There is marked desquamation of the epidermis, falling out of the hair, and the vigorous rubbing and scrubbing caused by the itching leads to a secondary eczema which is polymorphous, and usually leads to thickening and wrinkling of the skin.

2. *Dermatophagus itch.* The d. canis above mentioned is found in the external auditory passage of the dog. Dogs often suffer from otitis externa, and in the abundent purulent secretion these itch-insects are occasionally found. What part they play in the causatien of the malady is not fully known.

(*To be continued.*)

EXTRACTS FROM FOREIGN JOURNALS.

NARCOTISM SIMULATING TYPHOID FEVER—PRODUCED BY PAPAVERUS RHŒAS.

By M. L. Trasbot.

The necessity of careful and minute inquiry into the history of cases is enforced by the recorded errors of diagnosis which are sometimes justly charged upon veterinarians, and it is from the fact that these errors not unfrequently lead to very serious, and may indeed result in fatal consequences to the patients, that the record of their occurrence derives its principal value. In the

Recueil for January, 1888, Professor Trasbot reports the history of six cases, which, from the symptoms exhibited, and in part from the past history of the place as well from its imperfect present history, were at first diagnosticated as cases of simulated typhoid fever. In fact, they were to a certain extent so considered. The first animal was treated by Professor Trasbot, according to his judgment of the symptoms and indications, and recovered in twenty-four hours. A second animal became sick two days later, with the same symptoms, and was as promptly relieved by similar therapeutic measures. A few days later four other horses were attacked with the same symptoms, and were likewise relieved by the same form of treatment. The symptoms present with all the animals may be thus described: diminution of general sensibility; stiffness of the loins; dryness of the skin; respiration deep and slow (12 to 13); feebleness and slowness of the pulse (35); injection of the conjunctiva; dilatation of the pupils; apparent impairment of sight and hearing; fœces small and hard; absence of abdominal pains; great weakness; sleepy appearance; temperature normal, so far as it was taken. The treatment consisted in bleeding and saline laxatives.

On more careful investigation of the cases they proved to be due to the eating of wheat straw given to the horses as part of their ration, in which a large quantity of dry poppy head flowers (papaverus rhœus) were mixed. A change of diet prevented any further trouble.—*Recueil de Medic. Vet.*

EPITHELIAL CANCEROUS GROWTH OF THE CHEST IN THE HORSE.

By Messrs. Weber and Barrier.

The January number of the *Recueil* reports a very interesting case of large epithelial carcinomatous growth in the chest of an old horse, which had for some years exhibited some very peculiar symptoms. The disease seems to have first appeared about a year previous, at which time he become affected with a slight roaring, and soon after with some stiffness forward, followed by œdema of the chest, of the axilla, and at the base of the neck and internal face of the fore arm. These symptoms were treated as manifestations of purpura, and the patient appeared to be somewhat relieved, soon, however, to relapse into his former condition. While at rest, his respiration seemed to be almost normal, with a regular pulse, though weak. His appetite was good; the intestinal and urinary functions normal, and the temperature natural, with an appearance of general good health. Yet the superficial blood vessels were dilated and the veins of the neck, chest and shoulder, principally the jugulars, swollen; the glosso facial being so much enlarged as to interfere with taking the pulse. This condition of the blood vessels was more marked on the left than on the right side. When the animal was put to work, the enlargement of the veins became greally increased, the size of the jugulars becoming enormous. The whole condition was aggravated as the exercise continued, until at length the difficulty of walking reached the point of inability, the trouble with the respiration becoming correspondingly greater, and with bleeding at the nose adding itself to the other manifestations, the suffering animal would refuse to move further. But meanwhile the pulse remained comparatively but little altered, and retained its regularity free from any intermittence, while the temperature was only slightly increased.

Percussion of the chest revealed entire dullness in the lower part with but little resonance above—the dullness more marked on the left side, but existing also on the right. Auscultation discovered an extremely weak respiratory murmur, noticeable above, but absent below. The most careful examination of the heart failed to contribute to the formation of a positive diagnosis. The animal was at length destroyed and at the post-mortem examination of the chest an enormous epithelial carcinomatous growth was found, weighing not less than thirty-four pounds. It had numerous and even entire pleuritic adhesions in almost the entire extent of the chest, which increased more and more from the diaphragm forward, and interfering by their size and their adhesions to the pericardium with the functions of the heart, and thus giving rise to the external trouble of the circulation. Microscopic examination of the neoplasm demonstrated its true carcinomatous nature.—*Rec. de Med. Vet.*

TRAUMATIC PERICARDITIS.

By Mr. Marion.

A cow presented the following spmptoms: A hard, indolent, painless œdema, involving the intermaxillary space and extending upwards along the parotid, and the pulse at the glosso facial not perceptible on that account; respiration difficult and with double expiration, as in pulmonary emphysema; heart-beats slow and irregularly intermittent and difficult to detect; auscultation over the heart giving a slight metallic sound; half of the left lung dull on percussion; right lung normal; venous pulse once or twice well marked.

From these signs a diagnosis was made of traumatic pericarditis, and a fatal prognosis pronounced. For a few days very little variation could be discovered. Then the œdema of the head extended downward to the front of the chest; there was increased dullness on the left side; the metallic sound increased; the breath became offensive; there was slight thoracic effusion, participated in by the pericardium, which on being punctured discharged a purulent, yellowish-white and offensive fluid.

She continued to grow worse and died at the end of twenty days. At the post-mortem a nail about two inches in length was found imbedded in the sternum, between the sixth and seventh ribs. It had evidently been introduced into the recmen and passed through the pericardium into its cavity, without injuring the heart, and there excited the fatal pericarditis.—*Rec. de Med. Vet.*

OPENING OF THE MELBOURNE VETERINARY COLLEGE.

Yesterday afternoon a number of gentlemen met at the veterinary college of Mr. Kendall, M.R.C.V.S., in Brunswick street, Fitzroy (not far from Victoria street), to take part in the opening ceremony of that institution,. A brief inspection of the premises before the opening ceremony was sufficient to make one aware of the completeness of the arrangements for the treatment of sick or hurt horses and dogs, etc. Nearly all the stalls were occupied by animals getting cured, and the dog kennels were nearly all tenanted by "patients." The place is the only one of the kind in the colony, and now that its benefits are becoming widely known they are much sought after by those who have sick or injured animals. The Principal is Professor Kendall, M.R.C.V.S., and the lecturers are as follows:—Anatomy of the horse and other domesticated animals, Professor Rivett, M.R.C.V.S.; physiology, Dr. J. F. Joyce, M.D.; histology and the use of the microscope, Professor Kendall, M.R.C.V.S.; chemistry and botany, College of Pharmacy; pathology, Professor Kendall, M.R.C.V.S.; hospital practice and clinical instruction, Professor Rivett, M.R.C.V.S.; operative surgery and obstetrics, Professor Kendall, M.R.C.V.S.; materia medica and toxicology, College of Pharmacy; therapeutics and dispensing, Professor Rivett, M.R.C.V.S. The college has just been established, and already there are a fair number of students. At the opening ceremony of the college yesterday afternoon, Mr. Colville, Secretary of the Central Board of Health, presided in the absence of the Hon. J. L. Dow, who was unable to be present. Apologies for non-attendance were received from His Excellency the Governor, Baron von Mueller, Mr. Blackett, Mr. Shillinglaw and others. All of them expressed their warm admiration of the undertaking, and the benefits that would accrue from it.

The Chairman opened the proceedings, and called on Professor Kendall, who delivered the inaugural speech.

THE INAUGURAL ADDRESS.

Professor Kendall said: The occasion which has brought us together to-day is one of more than ordinary interest, not only to stock-owners but to the general community. Australia has already become one of the largest stock-raising countries of the world, and there remains ample scope for future developments and possibilities. It is therefore of the utmost importance to the future welfare of the country that we should endeavor to attain as high a degree of excellence as possible in all classes of live stock. But everyone who has any practical knowledge of the matter is aware of the difficulties to be met with in attempting to improve the different breeds of stock, and also of maintaining any given standard of excellence. Not only have we variations of soil and climate to deal with, but a variety of conditions which constantly tend to a deterioration in size, form, and quality, and to an increased liability to hereditary and other forms of disease. As a field for the study of comparative pathology few countries offer greater advantages than this. Prior to its being settled by Europeans it contained none of those animals that have been domesticated and have become the inseparable companions of civilized humanity; consequently, their comparatively recent introduction enables us to distinguish pathologically variations due to climatic or geographical causes. Many of the diseases from which our animals suffer differ in no material respect from those of the same character produced by similar causes in other countries, whilst others appear to be considerably modified in character and intensity from climatic or other reasons. Others again may be termed indigenous to the country, and are not met with elsewhere. Many of the latter are as yet but little understood, so that there is now an open field for a number of well-trained men, to say nothing of future requirements. As the country becomes more densely populated, and additional restrictions are placed upon animals by the further sub-division of pastoral lands, diseases are sure to increase in prevalence and variety, and the need for veterinary surgeons will become still more urgent. In the field of therapeutics there is much room for investigation. Already many valuable medicinal plants have been discovered, and I doubt not there are dozens of others amongst our native flora that only require a series of well-conducted experiments to test their effects upon animals in order to prove them to possess great therapeutic value. This is essentially the veterinarian's province, and it is to be hoped that some of you gentlemen who enter upon your course of study to-day will acquire an aptitude and liking for this kind of work, and ultimately become specialists in it. The chief aim of veterinary science is, or should be, the prevention of animal diseases, and, I might also add, many of the diseases incidental to human beings which are due, either directly or indirectly, to the animal food we eat. The sooner this is generally recognized the sooner will the teaching of veterinary science receive the appreciation its importance deserves. The prevention of animal diseases is a matter which rests to a great extent wtih stock-owners themselves, and one of the main objects of this establishment is to give sons of stock-owners, and others who intend following pastoral pursuits, an opportunity of acquiring practical as well as theoretical knowledge regarding the causes and nature of animal diseases that will enable them to select sound, healthy animals to breed from, and so readily detect any deviation from health in the animals under their immediate care, and discover the causes which give rise to it. Animals, as well as human beings, have a language by which they can express their wants and desires, pains and pleasures—a language which is superior to our own, in that it contains no lie. It will be one of the most important parts of our duty to teach you how to interpret this language, so that you may be able to attach the correct meaning to the various expressions it contains. Those of you who intend following the calling of veterinary surgeons will find that your future will depend to a great extent on the facility and success with which you can diagnose the various diseases of animals. It has often been said that it is more difficult to determine the character of a disease affecting an animal than in the case of human beings. This I hold to be contrary to fact. Whatever information we are able to obtain from the symptoms expressed by a sick animal may be relied upon as being real and truthful. Animals, unlike human beings, seldom dissemble, and are not influenced to the same extent by imaginary complaints. Our difficulty does not rest with the animals themselves, but with the grooms, drivers, or others in attendance upon them, who, to cover some error or fault of their own, are prone to throw us off the right track as to the cause or character of a disease or injury, so that information obtained from this source has often to be taken with great reservation. I believe it is now the custom in several of the Continental schools to teach medical students how to diagnose animal diseases before allowing them to practise on human beings, and there has recently been some agitation in England in regard to adopting a similar method of teaching. To an unprejudiced mind there can be no doubt about the beneficial effect of such a training upon the students, as it must tend to a higher development of the perceptive faculties, and to less dependence being placed on what a patient has to say about the complaint from which he suffers. I heartily congratulate those of you who have joined these classes with a view of qualifying as veterinary surgeons. To those who have a love and regard for the lower animals there can be no more congenial occupation than to attend them in their sufferings, and, being directed by their mute appeals to a correct understanding of their wants, to be able to alleviate their pain and restore them to health and usefulness. It has often been said that animals are not worth doctoring in this colony, and that it is cheaper to destroy them and replace them by others. The records of the hospital in connection with this institution show, to the credit of owners, that it is not the money value of a horse or other animal alone that induces them to place it under professional treatment. A wealthy man may lose a horse and think little or nothing about his loss, but the man whose horse has been earning him his living perhaps for years, does not allow it to suffer and die without making an effort to have it restored to health, and in the majority of cases he is rewarded for his trouble. While we are compelled to admit that up to the present veterinary science has made but little progress in Australia, there is every reason to believe that there is a much brighter prospect in the future. We have to congratulate ourselves on the improved status given to the profession by the Veterinary Surgeons Act of 1887. The public will now be able to judge us on our merits as veterinary surgeons, and no longer have their opinions influenced by the conduct and abilities of a number of men practising under assumed titles. The four years study which the Act prescribes before you will be eligible for your final examination, which is a longer period than that enforced in the colleges of Great Britain, should be a sufficient guarantee that the status of the profession will not suffer at your hands if you only avail yourselves of the opportunities that will be given you of gaining both theoretical and practical knowledge. During the whole of the period you will have the benefit of seeing an extensive hospital practice which in number and variety of cases is equal to that afforded by any of the British veterinary schools. In theory your attention will be first directed to what may be termed your preparatory studies. On three mornings in each week, Professor Rivett will lecture on anatomy, commencing with the skeleton, whilst it will be my duty to lecture on the soft structures of the body. For chemistry and botany you will be required to attend at the College of Pharmacy, where every facility is given for a thorough training in these important subjects. Dr. John F. Joyce, whose high scientific attainments are well known, will lecture on physiology and histology, both of which you will find of great value at a later period of your studies. Your more advanced studies at the College of Pharmacy will embrace materia medica, pharmacy, and toxicology, and at the institute you will be instructed in pathology and veterinary medicine and surgery, including the diseases of the horse and other domesticated animals. It is probable that at a later period of your course other teachers will be added to the staff and the curriculum be made as complete as that of any similar institution in the world.

Professor Rivett addressed a few remarks to the students, and moved a vote of thanks to the Chairman, who, in responding, expatiated on the incalculable benefits of the college.

FIFTH INTERNATIONAL VETERINARY CONGRESS.

APPEAL TO FOREIGN VETERINARIANS.

Dear Sir:—The Fourth International Veterinary Congress, at its last session in Brussels, in September, 1883, selected Paris as the place of meeting of the Fifth Congress, and appointed as a Committee of Organization those of its members who are residents of that city, with a condition providing for the co-operation of the members of the Bureau of the Brussels meeting.

When the time arrived for the consideration of the first basis of the fifth meeting it was found that the members from Paris who had belonged to the Brussels Congress were only three in number: Mr. Houssin, delegate from the Society of Practical Veterinary Medicine, and Messrs. Lavalard and Leblanc, delegates of the Central Society of Veterinary Medicine. Not willing to assume individually the entire responsibility of their commission, they decided to refer the subject to the societies of which they are representatives.

Besides Mr. Chauveau, who by virtue of his official position was naturally looked to to take the place of our regretted Professor Bouley, this committee may now be announced as composed of Messrs. Benjamin, Lavalard, Leblanc and Weber, delegates of the Central Society of Veterinary Medicine, Messrs. Butel, Houssin, Remaud and Rossignol, delegates of the Practical Veterinary Society, Messrs. Nocard and Trasbot, delegates of the Alfort School, and Messrs. Capeau and Delamoth, delegates of the Secretary of War.

You will thus perceive that the constitution of this committee is strictly in accordance with the design expressed by the Fourth Congress, all the members named being residents of Paris or its suburbs.

The Brussels Congress had decided that the next meeting should take place within five years, that is, at the latest, in 1888. Considering, however, that the international exhibition of 1889 will certainly attract large numbers of French and foreign veterinarians to this city, and that this fact will largely increase the importance and the dignity of the Congress, the Organizing Committee has by a unanimous vote agreed that the Fifth Congress should not take place before September, 1889. This month has been selected because it is a time of the year when professional duties are the least pressing, and the professors of the veterinary schools can take longer leave of absence, and also because it is at that time that the monument to be consecrated to the memory of H. Bouley is to be erected and dedicated. No occasion could be more favorable for giving to this important ceremony all the eclat and interest it deserves, and thus to pay well deserved homage to the man who has done so much for his profession, and whose life and works will never cease to reflect honor upon its history.

We, therefore, come to ask you to lend your co-operation to our efforts. It will be doubly valuable now, because it will assure us of your assistance in the selection of the important questions which will be discussed by the Congress, and also because it will certainly be influential in inducing the adhesion of others with yourself.

As soon as the text of the questions to be presented before the Congress shall be determined on, with the assistance of the members of the Bureau of the Brussels Congress, you will receive due notification of the fact.

Accept the assurance of our consideration.

EDW. NOCARD,
Secretary.

CHAUVEAU,
Pres. of the Committee.

The assessment for each member of the Congress is fixed at $2.00, which will entitle each member to receive all the publications of the Congress. Address Mr. Capon, 35 rue de Babylone, Paris (Seine.)

FORM OF SUBSCRIPTION TO THE FIFTH INTERNATIONAL VETERINARY CONGRESS.

I, the undersigned, veterinary surgeon to hereby express my desire to be enrolled as a member of the Fifth International Veterinary Congress, and will to this effect pay for my assessment the sum of $2.00.

Name and address.

ANSWER TO INQUIRY.

NEW VETERINARY COLLEGE STUDENT, EDINBURGH.

The only way a diploma from the American Veterinary College could be obtained in your condition, is to attend a full winter course of lectures and pass your examination for graduation. Your fees will be $5.00 for matriculation, $10.00 for dissection, $100.00 for lectures and $25.00 for diploma.

A. LIAUTARD, *Dean.*

SOCIETY MEETINGS.

ALUMNI ASSOCIATION OF THE AMERICAN VETERINARY COLLEGE.

The regular meeting of the Alumni Association of the American Veterinary College was held in the lecture room of the College, on Thursday, March 1st the President, D. J. Dixon, D.V.S. in the chair.

Members present were Drs. Johnson, Bridges, Hoskins, Dixon, Miller, Deronde, Moyer, J. C. Jackson, Wray, Peabody, McLean, Coates, Doyle, Birdsall, A. J. Dodine, Falker, Helm, Sellers, Pendry, Curry, Strange, and Autenreith.

The Secretary not being present at the opening of the meeting, the reading of the minutes was laid over and the report of the Executive Committee called for.

Dr. Miller (Chairman) said there had been no meeting of the Committee, consequently there was no report.

The President stated that there had been no business to come before the Committee, except the question of giving the usual prize and he had written each member of the Committee, asking for their views as to how the money should be raised to pay for it. He had received replies from all but one to the effect that it should be raised in the usual way. He had therefore instructed the Secretary to send out postal cards, and had selected a set of books as the alumni prize.

A warm discussion followed this explanation; several members present holding that the President was simply an ex-officio member of the Executive Committee and had exceeded his power; that the Executive Committee had been very remiss in their duties in not arranging for a general alumni dinner, etc. The action of the President was supported by others present, particularly Dr. Miller, who said the President had simply carried out the wishes of the Executive Committe and had certainly not exceeded his power.

Dr. Pendry said he considered it the duty of the Chairman to call a meeting of the committee, and not the President, and if no meeting had been called it was the fault of the former and not the latter.

Dr. Birdsall said there was no objection about giving the prize, but there ought to be some reason why a general alumni dinner had not been arranged for.

Dr. Miller referred to the last meeting of the Association, so few being present and the dinner a complete failure, claiming that it was the individual members and not the committee that were responsible for such a result.

Dr. Johnson endorsed the remarks of Dr. Miller, but he thought the Executive Committee should have tried to find out the reason of the general failure, and he had so expressed himself in his letter to the President.

Dr. McLean said there was no question as to the prize, but whether it had been given in proper form. He considered Dr. Miller the proper person to explain. The Executive Committee was the proper body to have acted; they had failed in their duty and they ought not to be whitewashed.

Many other explanations and reasons were given by some of those present, in which Drs. Hoskins, Coates and Sellers joined, Dr. Birdsall holding that they should have arranged for a dinner, if only five were present.

On motion, the Secretary was instructed to read the minutes of the last meeting, which were then adopted as read.

Dr. Miller moved that all previous minutes, that had not been acted upon, be approved. Carried.

Moved by Dr. Birdsall, seconded by Dr. Miller, that the Association have a dinner each and every year. Carried.

On motion of Dr. Hoskins, the following motion was duly carried:

"That the Alumni Executive Committee shall present, at the next annual meeting, a plan for the provision of the dinner, such plan to devise ways and means for the successful conducting of the same."

On motion, Drs. Johnson and Miller were appointed a committee to invite the graduating class to be present. After a formal introduction by Dr. Miller, they were welcomed in suitable terms by the President.

Prof. Weisse, of the Board of Trustees, was warmly welcomed and addressed those present at considerable length, with regard to the plan of erecting the new college building.

The Secretary and Treasurer's report was then read, ordered received and placed on file.

Dr. Birdsall moved, and it was seconded, that the by-laws be altered so as to make the annual dues one dollar. Carried.

The election of officers was then proceeded with and resulted as follows:

President, Dr. D. J. Dixon, re-elected by acclamation; Vice-President, Dr. W. H. Wray; Treasurer, Dr. Birdsall; Secretary, Dr. A. T. Sellers; Librarian, Dr. Hoskins.

On motion, the Treasurer was ordered to pay the Secretary's account for printing and postage, also for the set of books given as the alumni prize.

On motion, Drs. Hoskins and Johnson were appointed a committee to draft suitable resolutions on the death of the late Drs. A. L. Brown and Ed. Douglass, and to remit a copy of the same to each family.

There being no further business the meeting then adjourned in full harmony, promising well for the future.

NEW YORK STATE VETERINARY SOCIETY.

Meeting called to order at 8 P. M., Dr. W. H. Pendry in the chair.

Roll call dispensed with.

Minutes of the previous meeting were read and adopted.

Dr. R. W. Finlay then read a very interesting paper on Mechanical Injury to Tendons, which brought forth a very lengthy discussion, all present taking part in it. The essayist backed up his paper by citing several cases of prominent horses he had treated during the past year, all of which made a satisfactory recovery.

Dr. W. E. Cuff then moved that a vote of thanks be extended to the essayist of the evening, which was duly seconded and carried.

The Secretary read a communication he had received announcing the death of Dr. S. Cohen, V.S., Cambridgeport, Mass.

Dr. R. W. Finlay moved that the Secretary be instructed to forward to the deceased a resolution tendering the sympathy of this Society, and expressing its regret at the death of one of its members, which was duly seconded and carried.

The Chairman of the Board of Censors, Dr. S. K. Johnson, then reported that it was impossible for him to get the members of the Board to convene; he then tendered his resignation as a member of the Board of Censors.

Dr. T. Birdsall moved that it be accepted, which was seconded and carried.

Dr. J. H. Jacobus then tendered his resignation, which was accepted.

Dr. W. H. Pendry moved, as an amendment, that the resignation of Drs. Jacobus and Johnson be not accepted, which was lost.

Dr, W. E. Cuff then read a communication from Dr. F. Birdsall, tendering his resignation as Vice-President of this Society; motion that it be not accepted.

Dr. Birdsall insisting on his resignation being accepted, the question was put and carried.

Dr. Macham, a member of the Board of Censors, offered his resignation, which was accepted.

Dr. W. E. Cuff tendered his resignation as Secretary of this Society, which was accepted.

Dr. Pendry having left the Chair and calling Dr. R. Ogle to it, moved that we now proceed to the election of officers; the motion not being seconded, it was not carried.

Dr. T. Birdsall moved that the Secretary be instructed to notify all members of this Society to attend the next regular monthly meeting, to be held at Cooper Union and at which an election of officers will take place; which was duly seconded and carried.

Dr. E. Charum moved that the Society request the resignation of the President, for the good of the Society, which was duly seconded and carried.

In answer to the above motion, Dr. Pendry said if he was allowed to withdraw certain charges he had made, and which are to be investigated, he would resign, not alone as President, but also as a member of this Society, to which Drs. Birdsall and Charum strongly objected.

Adjourned. W. E. Cuff, D.V.S., *Secretary.*

NEBRASKA VETERINARY MEDICAL ASSOCIATION.

Pursuant to a call issued some time since, a meeting was held at the Paxton Hotel for the purpose of forming an organization of the veterinary surgeons of Nebraska.

The following gentlemen were present: Drs. L. H. Simpkins, Kearney; S. M. Osborn, Fremont; C. Brittell, St. Edwards; M. A. Bailey, Albion; A. W. Carmichael, DeWitt; W. S. Brayton, Beatrice; G. R. Young, Richard Ebbitt, H. L. Ramacciotti, Omaha; J. Gerth, Jr., Lincoln.

The meeting was called to order by Dr. J. Gerth, Jr., who was made temporary chairman. In taking his seat Dr. Gerth stated that the object of the proposed Association was to promote a fraternal feeling among the members, elevate the standard of the profession by scientific discussion and intellectual intercourse, and that by organization it would bring the profession into notice and add to it more responsibility and give it more dignity and honor. He thought the profession a very important one, and that organization was necessary to keep it from retrograding.

Mr. G. R. Young, of Omaha, was elected temporary Secretary.

After the adoption of a Constitution and By-Laws, the following officers were elected: President—State Veterinarian J. Gerth, Jr., Lincoln; Vice-President—Dr. H. L. Ramacciotti, Omaha; Secretary—Dr. G. R. Young, Omaha; Treasurer—Dr. W. S. Brayton, Beatrice; Board of Censors, Drs. L. E. Simpkins, Kearney, C. Brittell, St. Edwards, and Richard Ebbitt, Omaha.

The next meeting of the society, which by the Constitution is named the Nebraska Veterinary Medical Association, will be held at Lincoln on the second Thursday of June. Papers will be read at that meeting by Drs. W. S. Brayton and G. M. Osborn.

AMERICAN VETERINARY REVIEW,

JUNE, 1888.

EDITORIAL.

VETERINARY PROFESSION.—A paper read by Dr. W. Y. Williams before the Ohio State Veterinary Medical Association—importance of the paper—it treats of the uniformity in veterinary education by the various schools—the same subject under the consideration of the U. S. V. M. Association—Dr. Hoskins' labor and the credit he deserves—his report—*all* the schools say they approve of it—importance of that *all*—the new announcements of the various colleges in North America—the anxiety of the would-be student. PLEURO-PNEUMONIA IN NEW YORK.—A decision adverse to the work of the Bureau of Animal Industry—tagging objected to by one owner of cattle is sustained by the court—danger that might have arisen from that judicial action—but it is ended by prompt action of the Bureau, which obtains new power and assistance from the State—the proclamation of Governor Hill—now the work will go on more smoothly than ever. THE JOURNAL OF COMPARATIVE PATHOLOGY AND THERAPEUTICS.—The fourth recent addition to the ranks of veterinary journals—talented editorial management —a promising editorial number—our best wishes.

THE VETERINARY PROFESSION.—We begin in the present number of the REVIEW the publication of a paper which was read at one of the meetings of the Ohio State Veterinary Medical Association, by Dr. W. Y. Williams, a gentleman who needs no introduction to his confreres in the veterinarian ranks. A perusal of this essay will well repay our readers. It has been for some time in our hands, and our apology for deferring its appearance till the present time must be found in the mass of material pressing for insertion in our columns, and the insufficiency of the space at our command to accommodate at once the favors of all our contributors. The paper and the subject which it discusses will, however, lose none of their interest by the delay, the questions involved being of permanent importance, and therefore equally pressing at one time or another, in respect to the adjustment of the points requiring settlement at the hands of veterinarians and others. The treatise involves the consideration of the theme of *uniformity in the matter of veterinary education, with a longer term of instruction than that which is now required by a portion of our American veterinary training institutions.* The topics reviewed by the author in his paper comprise a comparison of the methods of teaching in the various schools, with the results respectively obtained, and the percentage of graduates in each, and his aim is to lead his hearers and the reader to an affirmative conclusion upon the proposition that the best interests of the profession will be promoted by the adoption of a three years' course of instruction.

The Doctor means by this, such a three years' course as some of our colleges have already contemplated and claim to have established, or such as the United States Veterinary Medical Association has for several years been laboring for, with an assiduity and earnestness of which only the committee of that Association and Dr. Hoskins are cognizant, to induce the various schools of the country to adopt. And if the endeavor shall ever be crowned with the success which it merits, to none will the credit of that success be more justly attributable than to the indefatigable and intelligent energy of Dr. Hoskins.

At the last meeting of the United States Veterinary Medical Association, Dr. H., who holds the position of chairman of the committee referred to, was fortunately favored with an opportunity of presenting his report, in which he stated, as we understand it, that he had received assurances from all the schools, that a three years' course would be acceptable to *all*—and there is great significance in that little monosyllable *all*, if it is to be interpreted to indicate the fact that each one of the veterinary schools of North America will hereafter insert in its customary annual announcement a proviso containing the obligatory requirement that "*admittance to graduation shall be conditioned upon the presentation of evidence that the condidate has performed three full years of curriculum college attendance.*"

This point, as we understand it, is the object of Dr. William's paper to establish, and it should be read with all the attention and interest which should be accorded to any well considered and able presentation of a question of acknowledged importance.

The announcements of the schools for the coming terms will doubtless be anxiously scanned by gentlemen contemplating enlistment in the ranks of intending veterinary students, and it is to be hoped that none of them will be tempted by the consideration of the additional year to be devoted to the labor of preparatory study, to object to the adoption of a policy which must insure, in its practical workings, a result which can but add to their self reliance and comfort when they shall enter upon their subsequent career as qualified practitioners. The end of the matter will be watched for with much curiosity by our inchoate D.V.S's, and others as well.

Of the thousand students who registered last winter in North American veterinary colleges, more than one-half expressed their preference for the teaching of the Canadian schools by their attendance at those institutions, and it could be the boast of one of these that the largest matriculating class in the world has issued from its halls. Numerous explanations of this fact might be pertinently alleged, which we do not feel it to be our province to indicate, and yet we cannot help thinking that much weight attaches to some of the reasons which are found influential in determining the preference of the embryo students who thus become sojourners for a time among the emigrant-boodlers from the United States who partly populate our neighbor land.

Pleuro-Penumonia in New York.—A judicial decision was recently rendered by one of our State courts in Westchester county which threatened for a time to interfere seriously with the work of the Bureau of Animal Industry, in enforcing the law for the extirpation of contagious pleuro-pneumonia in the Empire State.

Amongst the methods instituted by the Bureau are a census of animals and a system of marking them, and these measures are as thoroughly carried into effect as possible, and as the importance of the work demands. The process of marking consists in attaching a small brass tag to the ear of each animal. On the occasion referred to, the Inspectors of the Bureau, upon visiting a farm in the course of the fulfilment of their official duties, were refused admittance to the premises and compelled to retreat, and upon returning accompanied by a Sheriff, were a second time repulsed. The indictment of the rebellious farmer followed, involving the usual legal combat, and matters proceeded far enough to reach, at length, a decision by the trial Judge, who announced his approval of the resistance offered by the owner of the cattle. Such a conclusion, of course, seriously involved the whole matter, and greatly interfered with the process of stamping out contagious pleuro-pneumonia in the State of New York.

We were apprehensive, while this case continued in abeyance, that it might prove to be a source of serious annoyance to those who are interested in the cause of preventive sanitation, and there seemed to be reason to fear that evil consequences might follow, of which one could not easily define the limit or anticipate the form and nature, but which could not possibly be other than exceedingly disastrous and deplorable. The danger consisted not alone in the fact that a deliberate "defiance of the Inspectors," had been sanctioned by an inferior tribunal of "justice," for such an act was appealable and reversible, and a higher authority could easily overrule the error, but if that remedy should fail—and this was possible—who could guess the unknown trouble yet beyond?

But any danger that might have existed of this nature is now happily obviated by the interposition of the executive authority, in the form of a proclamation by the Governor, by which certain specified counties are placed in quarantine, and the Bureau is endowed with all the power they need to authorize them to carry into effect the measures necessary to the accomplishment of the purpose of their appointment. An active unity between the Federal and State Legislatures furnishes the only possible guarantee that the stamping out of pleuro-pneumonia can be effected with satisfaction and certainty. The following is the text of the Governor's proclamation:

Whereas, By chapter 134 of the Laws of 1878 and the acts amendatory thereof, it is made the duty of the Governor to suppress any infectious or contagious diseases affecting domestic animals and to prevent the same from spreading; and

Whereas, It has been certified to me by James Law of Ithaca, acting as my agent, that contagious pleuro-pneumonia or lung plague of the cattle exists in this State in the counties of New York, Kings, Queens, Richmond, and such part of the county of Westchester as lies southerly of the northerly boundaries of the towns of Greenburg, White Plains, and Harrison, in said county of Westchester; and

Whereas, By a law of the United States of May 29, 1884, entitled, "An act for the establishment of a Bureau of Animal Industry to prevent the exportation of diseased cattle and to provide means for the suppression and extirpation of pleuro-pneumonia and other contagious diseases among domestic animals," provision is made for co-operation of the United States with individual States for carrying this into effect; and,

Whereas, By chapter 155 of the Laws of 1887 the Governor is authorized to co-operate with the Commissioner of Agriculture of the United States for this purpose;

Now, therefore, I, David B. Hill, Governor, having accepted in April, 1887, on behalf of the State of New York, the rules and regulations prepared by the United States Commissioner of Agriculture, in compliance with the above mentioned acts, do hereby proclaim the existence of contagious pleuro-pneumonia or lung plague of neat cattle in the counties of New York, Kings, Queens, Richmond, and such part of the county of Westchester as lies southerly of the northern boundaries of the towns of Greenburg, White Plains, and Harrison, and do issue the following orders to be in force in the aforesaid geographical districts from the 14th day of May, 1888:

First.—All owners and persons responsible for neat cattle in the said geographical districts are ordered to retain all such neat cattle on the premises where they may be at the time of the issue of this proclamation, and not to allow any such cattle to move from one place or premises to another, nor to be upon any highway or unfenced ground unless they are in charge of a person with a special permit granted by an inspector or assistant inspector of the Bureau of Animal Industry of the United States, who shall also have been duly designated and appointed by my agent under this proclamation to act in this State.

Second.—All railroad companies and common carriers doing business within the quarantined counties and all sea and river craft doing business in the port of New York are ordered not to move any neat cattle into or out of any quarantined geographical district nor from any one part of such district to another unless they are accompanied by a special permit granted by such a said inspector or assistant inspector. Cattle in through transit by rail or boat from one quarantined district to another, and that are not to be unloaded within the quarantined district, will not require a permit. Cattle from unquarantined districts, as shown by the bills of lading, and arriving by rail or boat at the Union Stock Yards or the piers on the North or East River in New York City may come without a permit, but a permit will be required before they can be taken from such stock yards or piers.

Third.—Such said inspectors and assistant inspectors shall tag, number and register all cattle within the quarantined district, and the owners or custodians will be held responsible for all such cattle, dead or alive, as are registered on their books, and shall promptly report to the Chief Inspector for New York of the Bureau of Animal Industry, at 1,512 Broadway, New York City, all cases of sickness and all births and deaths among such cattle.

Fourth.—Such said inspectors and assistant inspectors shall have the power to inspect all neat cattle within the quarantined district and to condemn such as are affected with lung plague and such as have been exposed to the infection of said disease, and such condemned cattle shall be appraised and killed and the owners indemnified by the United States Department of Agriculture, as provided in chapter 155 of the Laws of 1887.

Fifth.—Butchers and other slaughterers of cattle, and all persons who receive and dispose of dead animals, are forbidden to receive cattle, alive or dead, from premises in the quarantined district, unless such are accompanied by a special permit from such a said inspector or assistant inspector, and such cattle must only be killed or skinned in the presence of such a said inspector or assistant inspector, who shall remove the tags and identify and examine the carcass.

Sixth.—Such said inspectors and assistant inspectors shall have free access to all places infected or suspected to be infected with lung plague, or any and all places where animals are quarantined by this order and proclamation, for the purpose of disinfecting the same.

Seventh.—Sheriffs, constables, and peace officers shall, when called upon, assist and protect the duly authorized employes of the Bureau of Animal Industry when engaged in the execution of their duties in suppressing the lung plague of cattle.

Eighth.—I hereby appoint James Law of Ithaca my agent to designate and appoint such inspectors and assistant inspectors of the Bureau of Animal Industry of the United States as he deems necessary to act in New York for the suppression of lung plague, and generally to carry out the provisions of the laws of this State enacted for such purpose.

Given at the capitol in the city of Albany this 14th day of May, in the year of our Lord one thousand eight hundred and eighty-eight.

[SEAL] By the Governor,
WILLIAM G. RICE, Private Secretary. DAVID B. HILL.

THE JOURNAL OF COMPARATIVE PATHOLOGY AND THERAPEUTICS.—In our April issue we referred to the recent addition of three new members—two Italian and one French—to the honorable fraternity of veterinary periodicals. To-day we take pleasure in welcoming still another, an English issue, *The Journal of Comparative Pathology and Therapeutics*, which is to be a quarterly, edited by Prof. J. McFadyean, M.B., B.Sc., of the Dicks Veterinary College.

We have reviewed the March number and if we can judge from its contents as to the quality of those that may follow it, we entertain no fear of its success. The first article, on the Pathology of Hæmoglobinuriæ, by editor J. McFadyean, is deserving of the careful attention of all veterinarians and specially our American confréres, who see so much of that disease.

We welcome *The Journal of Comparative Medicine and Therapeutics* and wish it all success. W. R. Jenkins is the American publisher.—A. L.

PAPERS COMPETING FOR THE REVIEW PRIZE.

STUDIES OF A CATTLE DISEASE HITHERTO ILL UNDERSTOOD.

Common Name—*Mad Itch*;
New Name given—*Enzootic Meningitis.*

By A. Westerner, M.D., V.S.

There frequently occurs, (in the great West at least), a very destructive disease among cattle, which is known as "Mad Itch." In vain have tried to trace it in the German, French, English and American pathologies at my command. Nowhere have I been fortunate enough to find a parallel. True, I find in the descriptions of meningitis and of "grass staggers" (dry murrain), given by Professors Law, Williams, Gamgee, Röll and others, some symptoms occurring in the disease I am about to describe, bnt the similarity is far from being satisfactory. The phenomena of rabies are more in accord with it than those of any other affection that I know. I have seen over fifty fatal cases in different localities in a comparatively short time, and I have received communications proving its extensive distribution over the country every year. It is indeed, very frequent in the State I live in, and it is enzootic and almost always fatal. In the Western States the experienced stockmen are familiar with the word "mad-itch," and many have had some experience with some disease known by that name, which was given doubtless on account of the furore of the patient and the intense rubbing of the head. Some competent veterinarians seem to ascribe its cause to so-called "dry murrain" (impaction of the third stomach) with omastitis, etc.; others have (justly or wrongly) believed it akin to hydrophobia, and again others simply call it mad-itch, without any attempt to explain it.

During the last three years the malady has so frequently come to my notice, I have found it so deadly, and so rebel to all kinds of curative treatments, that I determined to investigate it at as early a period as possible. During the last five months came my first opportunities. They consisted in two outbreaks of the disease, both of which, however, were studied under considerable disadvantage.

The following gives the result of my labors so far. I hope to be able to present the profession and the people with some additional researches in the near future.

HISTORICAL.

In November, 1887, I was called to Huntsville, Randolph County, Mo., where cattle on one farm were dying in quick succession. I found that the proprietor, Mr. James Hammitt, Jr., an intelligent young farmer and banker, and his neighbors, had already diagnosed the disease. It was the well-known (?) mad-itch. Five head of cattle were dead, one was convalescent. No new cases since forty-eight hours or three days. The cattle had taken sick in a nice pasture where they had been several months. There were and had been no hogs with them, and there were no corn cobs or stubble fields to which they had access, (except, of course, the unshelled corn on cob). There was nothing, in other words, indicating that impaction of the stomach might have existed and caused mad staggers or dry murrain so called. In the West, many stock raisers ascribe the occurrence of mad-itch to corn cobs masticated by hogs and then spit out and eaten by cattle. The cattle all had access to a good pond of water at a short distance from the main field. In this field, however, was *also* a pond, but owing to the excessively dry weather, it had become dry some months previously and had remained so until November, and no cattle could get water in it. A few days before the disease started it rained considerably, and this pond was partly filled. Then the cattle began to drink in it, instead of going to the other already mentioned, which was a little further off. When I arrived on the ground it was a few days after this newly filled-up pond had frozen all over some inches in thickness. The cattle had not been able to drink from it for some days. No more cases of sickness had occurred after the frost.

After taking notes on one carcass and all other material points, I waited for further developments, but nothing of interest to me took place. Consequently, I had to postpone my investigations after this very unsatisfactory inspection. In the last days of January, 1888, another outbreak occurred at a place called Rollinghome in the same county. There, I had much better success, but not yet as desired.

Three cattle had died and three died later among a bunch of two and three year old steers which had been fed for some time on a feed and pasture lot. It had been frozen hard for some time. Previous to the occurrence of the disease it thawed out a few inches deep and became dotted with deep and broad hoof prints, (made in the soil before, frost of course), that were filled with surface water, and from which the cattle drank.

There was an old pretty-well-filled pond in the lot which had been covered with ice all winter, but from which Mr. Elliott Palmer, the proprietor, dipped water for his cattle some few days before any died from mad-itch. Some had had a gradual change of feed from hay to hay and corn; one of those that died had had corn and hay all winter. No change even in quantity. I think all cattle though had a change in the quality of hay some time before the malady made its appearance.

After the first deaths the cattle were removed to an adjoining field through which surface water of this pond circulated by means of a deep stream. This field also was dotted with holes filled with ground surface water. Two cattle took sick in this lot and died. Then all the rest of the cattle were removed to still another place, dryer and higher than either of the two former. No disease after that.

SYMPTOMS.

The first symptom that was noticed in several cases was a slight watery discharge from the eyes, and a rapidly increasing dumpishness. I am not positive that these symptoms are invariably present at the beginning. There is always some intense itchness (in all appearance) at some part of the head, which is rubbed and scratched severely on stumps, trees, fences, etc. Usually one side of the head or only the lower maxillary presents this feature. Rubbing is frequently so constant and hard that it causes considerable irritation of the surface of the skin. Sometimes it even becomes raw and bloody, and the subcutaneous tissues become infiltrated with serum, and a prominent swelling occurs. Symptoms of nervous excitement make their appearance at an early date. They coincide with this rubbing. They are characterized at first by a wild glaring look, which soon acquires intensity and seems to be a mingling of fright and threats to scare the looker-on. Signs of hallucinations become apparent. If a patient is standing in a lot by itself for instance, it may be seen to glare and stare apparently at some object, prick its ears, blow its nose loudly, start suddenly in a threatening manner towards the imaginary thing, and sometimes it bellows in a hoarse howling voice. This more or less sonorous bellowing occurs in the stable as in the field, as all other symptoms do. It is not uncommon to see, also, some of those patients run wildly over the field, irrespective of obstacles of any kind. If a dog, a chicken or any animal is placed within reach, the furious beast will madly rush for it in a most menacing, if not decidedly aggressive and dangerous manner. Man himself, has to keep at a safe distance. I, myself, had to get out of range in haste on one occasion. It occurred in a stable, three years ago, when I was not very familiar with the peculiarities of the malady. Indeed, I narrowly escaped a good pointed pair of horns by scrambling over a fence in a style that must have been not very graceful. It is never safe to endeavor to cultivate friendship with those maddened brutes. They do not seem particular enough about their objective point of hugging.

The breathing is increased and the pulse is likewise augmented, but I have been unable to get it satisfactorily on account of this great excitability. I may say the same thing regarding temperature.

During all those symptoms there is more or less slobbering at the mouth. It becomes more pronounced at the latter part of life. Finally in a paroxysm, the animal falls, or it lies down abruptly, apparently exhausted, or maybe somewhat paralyzed, and dies without much struggling.

The bowels and urinary organs do not appear to have been materially, if at all, interfered with in their functions. In bleeding, (at certain periods at least, especially towards the closing of the sufferings by death), the blood is dark, flows freely and spreads over the ground without forming a solid clot. It does not brighten at all or brightens in color very little by contact with the oxygen of the air.

Pathological Anatomy.

Soon after death the body becomes very much distended by the accumulation of gas in the thorax, the abdomen, the bowels and the subcutaneous and inter-muscular connective tissues. The blood is dark, fluid and follows the knife freely in its course through the tissues. Seldom it is found slightly or partly coagulated in anterior and posterior aortas and other large blood vessels. A soft, mushy and very dark brown clot is sometimes found in the heart. The lungs decompose early after death (as other visceral parenchymatous organs do, in fact), but they appear otherwise intact. The same may be said of the liver. The spleen in the majority of cases was found darkened and softened at one extremity, somewhat like in Texas fever. In cases examined somewhat after death, the kidneys were considerably friable. In those examined earlier, they appeared sound or nearly so. There was little or no urine found in the bladder and what was there appeared of a normal nature to the naked eye.

Beneath the surface irritated by rubbing there was an accumulation of serosity of variable extent in the conjunctive tissue. The skin at those places was more or less denuded and raw, and even sometimes bloody, as mentioned in another part of this paper.

The laryngeal and pharyngeal tissues were congested to a great degree in some, and less in others. This lesion was more marked in the animals in which rubbing had occurred within neighborhood of that region. I have even noticed these tissues with a slight violet color.

The meninges were *always* found congestioned. The blood vessels were plainly seen to be filled, and gorged in fact, in all parts almost of the envelopes of the brain, extending down to the cervical spinal cord some inches below the medulla oblongata. There I met with hemmorhagic infrarctus. The brain substance itself (cerebrum and cerebellum), presented a congested appearance in some instances. I also met with some decidedly pronounced cases of softening of the brain. Occasionally there was an effusion of serosity in the arachnoid cavity, even in the ventricles.

I found always the alimentary canal intact in all its portions, with the exception of one single case, in which the ileo-cœcal region was decomposing, and in which the walls of the third stomach presented isolated and faint traces of congestioned capillaries. Doubtless there were secondary lesions. There was no impaction, and no congestion nor inflammation besides that. This is worthy of notice, since the few whom I have found endeavoring to account for the disease, bring impaction and omastitis into play as causation. When these conditions are present in mad-itch, they must be simply co-incidental, since this affection certainly occurs without them.

Etiology.

In view of what is explained in the foregoing chapters, which, so far as I can find, reverses the generally accepted opinions about mad-itch, I came to the conclusion that it is of a specific nature, due to a cause not yet identified positively, but which I suspect to be some virulent agent of the nature of ferments, some form of micro-organism generating a poison within the body, or outside of it in proper media and temperature for their growth and proliferation. This poison would act directly on the nervous system. The nature of the blood suggests that it is deeply altered, and that its organized elements have been attacked by some agent as effective as that which causes apparently similar changes in anthrax. I took specimens to examine with the microscope, but they were putrid before I reached home. From some others gotten later, I made cultures in various media—gelatinized beef broth, potatoe, etc., and raised crops of various microbes, but none of them I have as yet any reason to consider pathogenic.

I tested all the feed—hay, corn, water of pond, during twelve days on some cattle bought for that purpose from a place where no disease had occurred, but failed to produce it. The water had again frozen before this occurred, however, and the field surface water, (in hoof prints), I had no opportunity to test.

I took from one case a little *serum* from the arachnoid cavity, the conjunctive tissue beneath rubbed surface, and a drop of blood in the heart, mixed the whole with a little tepid water, and inoculated a one year old bull with this substance in the right ear and right side of neck. *Ten* days later the bull *died* with *symptoms* of mad-itch and presented its lesions at post-mortem examination. Now this bull was purchased away from the pasture where the disease occurred; he had never been there and had been on a healthy diet with a lot of other cattle without any change for several months. I left him where I found him, with his bunch of cattle, and he *only* died, although they were all treated alike, with the exception of this inoculation. Unfortuately I was urgently called away, and could not proceed in the line of my work for some days after my specimens had decomposed.

I am aware that this single inoculation and its results are insufficient to satisfy the mind of the scientist and the professional, but it is at least very suggestive, and to me it is more than that, because I know under what condition the experiment was carried. I must wait for another outbreak to take up the chain of my investigations. At this point, however, I feel justified in saying that, if the exact causation is not yet determined, we have at least established positively one very important point, and I consider this achievement of great value to stock raisers, veterinarians and scientists generally. To the former it is a matter of finance; to the latter, a matter of finance and scientific interest. I mean that the pathological nature of so-called mad-itch is comparatively well proven by the cases I had the good fortune to study. Whether further investigations sustain my suspicions or not, regarding the immediate acting cause of mad-itch, its nature is now to me entirely different to what I had been led to believe, and this knowledge is of great value in my official capacity. And again, regarding the great resemblance of this disease and hydrophobia or rabies in their respective peculiar symptoms and lesions, there is a point of much interest to the student's mind.

From my imperfect researches regarding mad-itch, which I believe are the first made, possibly some more able men may experiment and lead the practitioner to some good practical result, and thus benefit the profession and the country.

TREATMENT.

The various medicinal and other curative treatments have been with me a total failure. Suitable physics, diuretics, antiseptics, stimulants, antifebriles, narcotics, antiphlogistics, etc., have been tried in proper time and manner on different occasions, and none gave good results. Cold packing properly applied, and bleeding, were also resorted to uselessly. I need not name all those treatments in particular; suffice it to state the class of curative treatments tried.

As preventives, frost and isolation from the place where the disease occurred seemed of positive benefit every time it came to our aid. When it froze hard the disease stopped a few days after, whether the cattle were left where they took sick or not. If I moved the stock to healthy and dry quarters away from the grounds, (which I am tempted to call infectious), the disease stopped after a few days. Before I practiced this form of quarantine, more cases died at each outbreak. Once twenty-one or two died of a herd of thirty. They were a mad lot.

Possibly further work may lead us to much more practical and beneficial results. Perhaps drainage, for instance, will in this case, like in some well-known specific maladies, come to our assistance if we can present evidence of infectious grounds or water. Again we may find some means of disinfection practicable to some extent?

I respectfully submit this paper to my professional brethren for their analysis and criticism, trusting to meet fair judgment, and that some able scientist may sift the matter thoroughly. I present the matter in a hasty manner, writing from notes while traveling and having no work whatever on hand. Therefore, I beg some indulgence for the embarrassed literature.

ORIGINAL ARTICLES.

THE VETERINARY PROFESSION: ITS OPPORTUNITIES AND NEEDS FOR THE FUTURE.

By W. Y. Williams, V.S.

In whatever station or pursuit of life, it behooves men to pause occasionally for a time, and make a careful reckoning of their surroundings; to look carefully into the past and consider the forces which have been at work; then examine critically their present status, determining what useful or baneful effect this or that force has exerted, and in what essentials their present position differs from that which should have been attained or desired;

and then, turning to the future, ask what are their prospects and possibilities, and what need they do to attain and secure them?

Meeting here to-day as the representatives of our profession in Illinois, what question can we consider which is of more importance to the public or ourselves than our present standing, the influences which have brought it about, and our future outlook?

What, then, are the forces which have operated upon our profession in the past, and what, then, the present result of those influences?

It is unnecessary and impossible in this paper to insert a history of the veterinary profession in America, but we do need to trace the general outlines of this history in so far as is necessary to the elucidation of our subject. As nearly as we can determine, veterinary science was practically unknown in America until sixty years ago, the health and life of domestic animals being intrusted to the care of the blacksmith, horse trainer or stable groom, but about this time the increasing value of our live-stock presented a possible field for usefulness and reward to a few of the educated veterinarians of the old world, and so we note from this time, the occasional migration to the cities of America of learned veterinarians from Europe, mostly from the British Isles.

Here the worthy ones, by demonstrating their superiority over the village blacksmith and stable groom, in the management of animal diseases, won an honorable and remunerative patronage, and the title of veterinary surgeon began to be known and understood in some of our eastern cities.

But while these few scientific men were establishing themselves, their success gave increased virility to empiricism, that most pernicious influence, which spread its baneful work over the entire continent and still holds a firm and destructive sway in nearly every if not every, part of America.

No sooner had the veterinary surgeon attained an honorable standing and lucrative patronage, than many of the ignorant, drunken, depraved horse traders and livery stable hangers-on, whose chief capital was reckless presumption and dishonesty, ever anxious to obtain a dollar, regardless of the means, conceived the idea of constituting themselves veterinary surgeons, and accordingly announced their suddenly assumed title of veterinary surgeon in flaming colors, their spelling of "veterinary" being frequently original, if not comic.

They prospered, they increased, they multiplied, their numbers seeming inexhaustible, always keeping pace, in numbers, with the increase of live-stock, and frequently exceeding the demand.

Owners of diseased animals were left to the mercy, in almost every locality, of these unprincipled charlatans, who used the popular ignorance upon veterinary matters for their financial benefit, and soon became adepts at dispelling "wolf in the tail," "hollow horn," and "loss of cud," in cows; "moon eyes," "hooks" and "chest founder" in horses, and aggregations of currency in people's pockets.

The ignorance of the general public seemed so profound that many apparently thought veterinarians were merely born so, and scarcely thought of the existence or need of veterinary colleges for their theoretical and practical education, and from this state of affairs, as well as the character of the men claiming to be veterinary surgeons, developed the idea—which still exists to some extent—that veterinarians cannot and need not be gentlemen, and this feeling has exerted a powerful influence against the adoption of the veterinary profession as a vocation by worthy men.

Among the more intelligent of stock owners there gradually grew, however, a desire for more rational treatment of diseases of live stock, and to assist them in attaining some of the rudiments of veterinary science and enable them to cope with some of the common ailments, they turned to the popular and then useful writings of Youatt, Spooner, Clater and others; and slowly, the stockman became more or less skilled in the diseases of animals, and his services were demanded and obtained by the neighborhood.

In the meantime the educated veterinarian from abroad slowly made his presence more favorably felt in his immediate vicinity, and among the best classes there grew a demand for more qualified men, but from whence should they come? The prospective honors and emoluments were not such as to permanently attract many first class men to our shores, and amongst the arrivals many were doubtless inefficient, but there were some men of solid worth, whose zeal and self-devotion to their work, at that day, secured benefits to our profession which many of us but feebly comprehend.

Later, as the demand for qualified veterinarians became partially recognized, and before there was a sufficient learned force, or a sustaining demand for such institutions, veterinary colleges began to appear, at first proving sort of still-born monstrosities, followed closely by a few premature, sickly, short-lived affairs; not wholly fruitless, however.

The first college was announced at Boston about 1855, but seems to have been without a qualified V. S. or M. D. in its faculty, without building or curriculum, and its operations seem to have consisted merely of receiving fees and issuing diplomas.

In the immediate succeeding years, through the more healthful demand for such institutions, after many trials and disappointments, veterinary colleges finally became fixed institutions of the country, still, like to-day, they were imperfect and called for much enthusiasm and self-denial to induce competent men to undertake the enterprise.

The finances of most veterinarians were inadequate to thorough equipment and ready support of a college, and as a paying number of students was difficult to obtain, most lecturers were compelled to practice for a living, when practice offered, and lecture for glory in their leisure hours. But glory does not appease hunger nor allay thirst, and so it seems that the meager college income frequently caused internal dissensions which threatened the existence of the institutions.

Gradually, as the demand for qualified veterinarians became steady and reliable, the tottering colleges became settled, and their influence in moulding the then shapeless veterinary profession in America became apparent.

To fully appreciate the influence of these colleges we must bear in mind their inadequate financial support, which necessarily caused corresponding deficiency in buildings, appliances, and in the number and quality of teachers, so that it frequently happened that a layman or M. D. was assigned to a lectureship upon subjects which should have been taught only by a veterinarian. Not that we condemn the lecturing upon some subjects by M. Ds., but that such lectures should be confined to such subjects as the lecturer, by his education, is especially adapted to teach.

The demands of the lecturer's private practice upon his time often passed the bounds of policy and denied the student important instruction, for which he had already paid a fee; and yet, what was to be done?

A large part of the public still exerted an evil influence upon the success of the colleges, by their attitude toward graduates, considering them as a sort of necessary evil, useful in cases of emergency or colic, at other times an unmitigated nuisance, similar to the empiric, and not very distantly related to the vagrant, scoundrel or ignoramus, regarding them approachable in any way for money consideration; devoid of social or educational standing, wholly unrecognized by the medical and other learned professions.

With these influences, it is quite natural that the colleges should draw largely for their students upon men from the lower walks of life—the broken down jockey, the ruined race horse gambler or the empiric's son, cherishing a morbidly profound reverence for his father's ideas, or the empiric himself, desiring a diploma for a cloak—yet we honor the practising non-graduate who sees his error, and qualifies himself that he may be a better man, a true veterinarian, and would not in any way prevent their taking such a course.

Slowly, higher-toned public sentiment brought new and better influences to bear upon veterinary education, some colleges obtaining valuable financial and other encouragement, and also there being established veterinary professorships in many of our agricultural and polytechnical institutions, which exerted a powerful influence for good, insuring to the lecturer social and scientific respect, with reasonable salary and appliances. And the honorable position of the lecturer made his profession honorable in the student's eye, bringing worthy young men into such relations as to interest them in veterinary science, and, being generally liberally educated, and acquiring thorough training in the collateral branches, their services were rendered quite beneficial to the profession at large, and in their turn influencing other capable young men to become qualified veterinarians.

The National and State Governments, through their efforts to extirpate and prevent the spread of contagious disease, have unintentionally done much to advance our profession, by employing almost exclusively well qualified, scholarly gentlemen, of honor and integrity, who by their extensive associations in their official capacity, and undoubted usefulness to the stock owner, have favorably influenced the sentiment of the general public.

The United States War Department, on the other hand, seems unfriendly to veterinary science. allowing a starving salary and a rank just below a private, all ranks above being filled.

We note with amusement the boast of a New York veterinary college that it has a lien on, or control of, the veterinary appointments to the United States Army, and suggest that they get their lien copyrighted, for if all accounts be true, the position of army veterinarian is not one to be coveted.

The public press, especially agricultural and live stock journals, has wielded a notable influence, each usually having its veterinary column, generally presided over by competent and gentlemanly veterinarians, their influence for good or evil varying with the men and the times.

Heretofore, as now, these columns have been largely devoted to gratuitous prescriptions for cases briefly described by letter, by a supposed subscriber—doubtless proving in many cases of earlier days, when veterinarians were few, quite beneficial to the anxious inquirer—and has drawn public attention to the fact that there is a veterinary science, distinct from empiricism, (and perhaps some empirics have learned to spell "veterinary" by having seen it in the papers], but such a column has not been an unmixed good to the profession, or if it has, it is about the only purely good thing, except Christianity, that comes "without money and without price."

Many of these columns are now injurious and unprofessional, proving disastrous in various ways. Such gratuitous prescriptions are not considered professional by M. Ds., and why should they be with us? It often puts a false estimate upon the veterinary editor, surrounding him with a mysterious sort of halo, which sometimes dazzles and leads him to false conceptions of his own greatness; or, if the inquirer tries his remedies, prescribed by guess, the editor may sink low in the inquirer's estimation, dragging down his brethren with him, leaving Inquirer to believe that all veterinarians are like the editor, too ignorant to cure an animal without seeing it, or having any good grounds upon which to form a safe diagnosis.

But the worst harm comes to the young, struggling practitioner, who is perhaps treating a case, having made a proper diagnosis, but the owner becoming dubious of the young man's attainments, and annoyed at the slow progress of the case, writes a short description to the majestic veterinary editor, who replies through his column, giving a wholly different diagnosis, &c., which the owner accepts as necessarily correct, as the *editor* says so, and discharges the young practitioner unceremoniously, and in the most discouraging manner.

We have seen these influences, and know just how one feels. Gratuitous prescriptions also mislead well meaning stock owners to attempt the treatment of serious cases, without the assistance of an available practitioner, until too late for success, when the practitioner gets the blame for bad results, and with him the profession at large, the owner concluding both to be inefficient.

Veterinary columns have been so conducted, however, that they were beneficial to subscribers, publishers and the profession: wherein the editors have taken up topics of universal interest to live stock owners, regarding contagious or epizootic diseases, their characters, history, causes, means of extirpation or prevention; or the dangers to the public health through contact with the affected animals, or through the consumption of meat or milk from such animals; or regarding some other of the more common ailments, their causes and prevention; or any topic regarding the maintenance of the health of our domestic animals.

Some of our States have so far advanced in sentiment as to enact laws for our protection which have drawn educated members of the profession down to the level of empirics, the effects, so far, apparently proving the opposite of what was desired, assisting the empiric and crippling the qualified practitioner. Such a law was attempted in our State, but we believe we are fortunate that it has not passed.

With such influences at work for half a century, what is our present status?

Everywhere there exists a stronger and ever increasing sentiment in favor of a higher standard in veterinary education. In all communities the sentiment has changed, and even the empiric lays aside his once proud title of farrier or horse-doctor and assumes the title of veterinary surgeon or M.R.C.V.S. True enough he still exists, but the number is stationary or on the decline, and his influence is decidedly on the wane.

Scattered everywhere in important live-stock districts, there are veterinary surgeons from this or that college, mostly young men, largely well-meaning, judicious and earnest, who by their own merits occupy honorable positions in their communities and a fair or lucrative patronage, while others occupy honorable positions in the employ of State or National Governments, where their work does much to give our profession standing.

The press of the country, we believe, is a unit in favor of high veterinary qualifications and are affording us much useful assistance by keeping, in one way and another, our profession almost constantly before the public.

We now have veterinary colleges presenting a variety of facilities and requirements, varying largely in their patronage and character of students, and in the qualifications necessary to entrance and exit.

Statistics of most of the colleges were not available, hence we are able to allude to a few facts only, to demonstrate, in a very imperfect way, their educational requirements.

For convenience, we will denominate the Ontario, Montreal, American and Chicago schools the old, and the University of Pennsylvania, Harvard, Cornell, University of Iowa, &c., the new schools, and will as far as possible treat them collectively.

The new schools claim to require at least a thorough common school education for admission, and we have no evidence at hand to lead us to suspect any deviation from the claim.

The old schools make less pretentious claims, and judging from observation, and from evidence at hand, in shape of communications, &c., of too personal a nature to allude to farther here they fail to enforce any entrance examination worthy of the name.

In point of time, the new schools require three sessions of about nine months each, or a total of about twenty-seven months.

The old colleges vary in time, but are essentially the same. The Montreal college advertises the longest time, three sessions of scant six months, or a total of about sixteen months net attendance, excluding holidays, but owing to the very common and protracted absence of the principal lecturer, leaving the most important work at a standstill at any time in the sessions, and the minor subjects rather ineffectually looked after by assistants, it unfortunately brings the available time for the average student down nearly to the level of the others, but of course the time is there and opportunities are there, and the zealous student can go on studying, but too much like he could study on a farm.

The American college requires two sessions of scant six months each, including holidays, and one spring session, of apparently indefinite duration, or a net attendance of probably twelve months.

The Chicago college requires eleven months net attendance, and the Ontario college requires two sessions of not over five months each, including holidays, or nine months net attendance, for graduation.

Outside of lectures by medical gentlemen and laymen, the strictly veterinary staff appears to be about as follows: University of Pennsylvania 5,—2 experienced and 3 recent graduates; Chicago 3,—resident in Chicago, all experienced; Ontario 3,—at least 2 experienced; Montreal 3,—2 of whom are experienced.

Statistics as to the number of students attending and percentage of graduates, were not available to the extent desired, and lack of time prevented their being obtained.

1886-7,—	Ontario College,	of	355	students,	graduated	37$\frac{2}{3}$	per cent.
“	Montreal “	“	46	“	“	13$\frac{1}{23}$	“
1882-3,—	American “	“	60	“	“	36$\frac{2}{3}$	“
1886-7,—	Univ. of Penn.,	“	49	“	“	20$\frac{2}{5}$	“
“	Chicago College,…………………………………					26	graduates.

A comparison of these imperfect data shows that a college draws students in proportion to the percentage of students graduated each year, and in inverse ratio to the length of curriculum;

not that we would have it inferred that these questions always determine the student's choice at all, for the college having the most graduates to her credit naturally seems the most popular at first sight; and nearly all intending students consult their nearest veterinary surgeon regarding the college to choose, before making a selection, and this practitioner very naturally recommends his *alma mater*, so that the college with the longest list of alumni has or should have the most influential friends to induce students to choose that college.

The colleges requiring three sessions for graduation very naturally show a smaller percentage of graduates, as there are three classes, the members of only one of which are available for graduation, while the three years' time increases the probabilities of students dropping out from various causes. On the whole we believe that, were the data available, we would find that the ratio of graduates to the number of students who have attended the course prescribed, would reach ninety-five per cent. or upwards, a percentage probably unequaled, surely unsurpassed, in any class of learned institutions in this or any other country. Possibly these figures imply thorough teaching by the faculty and great aptness on the part of students, but more likely, we believe, they indicate a laxity in the examinations.

An encouraging sign of the times, however, is the fact that the University of Pennsylvania had enrolled in 1886–'7, forty-nine students who were willing to submit to a three years' course of nine months each, and we are credibly informed that Harvard and several of the veterinary departments in agricultural universities are reasonably well patronized. That they will prosper more and more each year should be the fervent wish of every veterinarian who has the true interests of his profession at heart, and still more fervently should we hope that those we have chosen to denominate "old" colleges, should soon find sufficient financial and moral support to enable them to advance to the same position as to requirements, as we feel sure all interested parties already admit that a full three years' course is at least short enough.

(*To be continued*).

SUGGESTIONS IN THE TREATMENT OF INJURIES OF TENDONS.

By R. W. Finlay.

(A paper read before the N. Y. State Veterinary Society.)

It has fallen to my lot during the past year to meet with several cases of *injured flexor tendons* among the trotting class of horses, many of whom have figured conspicuously in the *twenty* and *thirty* class, rendering them particularly interesting to me, from both a surgical and financial standpoint.

The former condition, while it treats of the variety and nature of the wound inflicted, and its intimate relationship to the function of locomotion, presents phenomena and exigencics arising therefrom, calling for all the acumen the surgeon possesses. Particularly so is this noticeable when, as it frequently happens, the accident occurs at some distance from the stable, and, as in several of the cases I am about to report, has taken place where modern appliances have been impossible to obtain. Of course, such are the fortunes of war—and no doubt many would suggest following the adage, "In time of peace prepare for war." But I may answer that in spite of all well regulated plans, we will be occasion ally surprised, or our supplies may run out. Under such circumstances we naturally feel justified in utilizing whatever there may be at hand that will aid us in dressing the wound under just such circumstances.

On the night of April 10th I was called professionally to treat the sorrell gelding *George*—record 2:26—who, while being driven before a top wagon, was run into from behind. The wagon was overturned and its occupants, a lady and gentleman (the owner of the animal), thrown out. The gentleman was dragged some distance. Both occupants of the wagon fortunately escaped unhurt, though somewhat shaken up. The gelding, in his frantic efforts to free himself from the wagon, lacerated the right and left hind legs about junction of the middle and the lower third of the metatarsal region posteriorly, lacerating the right for a space of one and one-half inches, completely reducing the sheath and the posterior tendon to a mass of pulp. The left was the recipient of distinct attention from probably the edge of the axle, for a space of about two inches in length by one and one-quarter inches in width, crushing through the sheath, the posterior tendon, and severely injuring the other.

The fetlocks both went down and the toes turned up slightly. The animal exhibited evidence of great distress with profuse diaphoresis and nervous excitement to a degree pitable to behold. I make it a rule to inject hypodermically five or six grains of morphia to allay pain and render the dressing of the injured tendons easier.

I had the animal supported by placing a plank under the abdominal region, the ends held by a couple of lusty fellows, while with the aid of another I placed a large roll of oakum around the legs from the lower border of the hock to the foot, over which I passed all the bandages I could make out of a light road blanket. An ambulance had arrived by this time, the animal was placed in a sling and taken quietly to the stable, a distance of about four miles, arriving there at about one o'clock in the morning. He was carefully removed from the ambulance, carried into the stable, placed on the elevator, sent upstairs, carried to a stall and placed in slings. He was given another hypodermic injection of morphia, allowed oatmeal water and hay until morning, when shoes containing a bar running across the heels, elevated three and one-half inches from the floor, were nailed on. This standing on an inclined plane has been one of the most strikingly beneficial features with me in the way of treatment of this class of injuries. I prefer having the bar to extend backward and from the heels, sufficient to give a good foothold on the floor.

The following morning, on removing the dressing preparatory to setting up in plaster of paris bandages, the extent of the injuries were so formidable that I determined to hermetically seal with plaster bandages the legs from the lower border of the hocks to the coronet, as a means of support, intending to remove sufficient for an opening for dressing further on when the discharge forming would warrant. Acting on this impulse, I dressed with a two and one-half per cent. solution of carbolic acid, dusted the wound over with powdered willow charcoal, covered the leg with oakum, and applied plaster bandages immersed in water to moisten the plaster contained in the meshes of the muslin. I generally apply three bandages of about four inches wide and three yards long, after which a thin solution of plaster is spread over all the leg, held in proper position until the plaster has set, which generally takes about ten minutes, when the opposite leg was treated to the same dressing. It is surprising the degree of comfort that is manifested when the dressings have set.

There is always a certain degree of surgical fever present in these cases which calls for mild measures of the aperient, diuretic and tonic type; the food to be of a laxative variety and a liberal supply of water containing a sprinkling of oatmeal. Careful watching for destructive changes in the neighborhood of the injuries, day by day, did not reveal the necessity for removal of bandages in order to dress antiseptically until the 18th, or eight days after the accident, when removal of the dressings revealed a comparatively safe molecular death of parts that would warrant the same method being adopted as before described, with this exception, that I dressed only the left leg. The right received attention the day following.

Seven days subsequent to this I dressed the left leg, when a slough compassing two inches of the sheath and posterior tendon came away, leaving a pretty healthy looking edge of wound. I cleansed the wound with solution of carbolic to which was added a small amount of tinct. aloes comp., dusted over with the charcoal. Applied oakum, covering over the whole leg from hock down, applying a dry bandage from below upward, in order to prevent discharge from forming pockets in the sheath of the tendons below the wound; after which applied plaster bandages as before described. Opposite leg dressed next day; slough somewhat smaller than the left. Same fair appearance of wound, exhibiting a granulating tendency; dressed it same as other. Animal pretty easy for a case of its magnitude. Appetite somewhat capricious. Bowels inclined to be costive; regulated with one gill of ground flaxseed in the evening feed. Allowed plenty of vegetables; disposed to relish carrots and apples. Vegetable tonics and mild diuretics given daily to improve general tone of digestion.

Eight days subsequent, which brings us up to May 3d, removed dressings of the left leg, when a clean looking granulating wound was exhibited that had filled about one-half the gap with good reparative material. Dressed as before, exerting less pressure from below than in previous dressings. Plaster bandages applied as before. Dressed the right leg at same time. Same good appearance as in the left; reparative process rather better established. From this time out animal bears more weight on heels, eats well and has filled out in the flank somewhat. Coat looks bright; disposition cheerful; excretive functions normal.

May 9th.—Dressed wounds; have granulated, completely filling the gap, and slightly inclined to bulge. Dressed with solution chloride of zinc, twenty grains to the ounce, dusted with charcoal, dressed with oakum and plaster bandages as before. Both legs treated. Slings lowered a little at a time to prevent bed sores. Belly sponged with dilute vinegar as astringent. Animal inclined to bear entire weight at times on the legs alternately, right the longest.

May 14th.—Slings lowered. Animal moved a few times on the floor; moves fair. Legs somewhat stiff, but improved so much that he is placed in loose box containing sawdust on the floor instead of straw, in order to prevent tangling up in moving. Later in the day the animal laid down, and enjoyed it amazingly. After a few hours got up easy, but seemed to have sprained the left leg. Holds it up at times. Laid down again for several hours, got up safely and moves easier.

May 16th.—Removed plaster dressing from legs. Dressed granulating surface with powdered alum daily, using oakum and ordinary bandages. Animal moves carefully but safe.

May 22d.—Lowered heels one inch. No more bandages used. Alum dressing several times a day. Animal given walking exercise for fifteen minutes at a time, twice a day, gradually increasing amount daily. Legs showered daily with cold water and grows stronger.

May 30th.—Shoes lowered to one and one-half inches. Bar removed for safe exercising.

June 14th.—Animal exercising on street for a few days, then to a road-cart, finally sent to pasture.

History given in September: jumping every fence on the farm. During October was used in harness for depot work. During

November was showing up as strong as ever and said to be for a half-mile as fast as ever.

The nature of the wounds led me to use dressing of a permanent nature instead of the open window variety, as heretofore employed, experience proving that healing under the covered method gave the most flattering results, while offering the best possible protection.

Case 2. On July 23d, the grey standard bred mare *Gloriana* —2:26 class—met with a lacerated wound of the right hind flexor tendons, severing all support. The fetlock went down, the toe inclined upwards. There were several contusions in other parts. This one required same attention as given in the above case, and was dressed as above in every detail, at intervals of about eight days apart. On September 12th was exercising well for pasture.

Case 3. September 12.—Bay gelding, property of Dr. Quigley, met with a lacerated wound of the left hind flexor tendons. Presented same symptoms that characterized the above cases—same lowering of the fetlocks, same turning up of the toe, etc. Was subjected to the same plan of treatment as above described. In this case the sheath sloughed about one and one-fourth of an inch. The tendon, although bruised, did not undergo sloughing, and on October 4th was under walking exercise, gradually getting stronger during the month. In the early part of November had recovered sufficiently for light work in doctor's phæton.

DISEASES OF THE SKIN AMONG DOMESTICATED ANIMALS.

By George Muller, Ph.D., Docent in the Royal Veterinary School of Munich.

(Translated by Wm. S. Gottheil, M.D., Instructor in Dermatology at the N. Y. Polyclinic Lecturer on Histology at the American Veterinary College.)

(*Continued from page* 83.)

In the domestic cat we find:

1. *Sarcoptes-itch.*—The eruption begins on the head, but may spread over the entire body. At first the malady appears like the sarcoptes-itch of the dog, but later on it differs from it in appearance. Thick greyish-brown crusts appear; the skin becomes wrinkled, thick, plicated, and finally, quite hard and stiff.

2. *Dermatophagus-itch*, in the external auditory passage. The malady runs its course with the symptoms of an otitis externa.

Sarcoptes-itch occurs in lions and leopards, caused by S. scabiei (Delafond and Bourguignon, Johne). In the cases that have been observed, circumscribed spots appeared upon the breast, the abdomen, the back, and soon spread over the entire body. The hairs were lost, the skin was thickened and folded, and covered with crusts and scales.

Treatment of Scabies. The following antiparasitic remedies are used in these diseases by the veterinary surgeons:

a. *Aromatic phenol combinations.* The most efficacious of these is *creosote*, and then following, in diminishing efficiency, carbolic acid, benzole, petroleum, naphthol, naphthalin, tar, oleum cornu cervi, wood naphtha.

b. *Aromatic vegetable products.* Balsam of Peru, styrax, balsam of tolu.

c. *Alcaloidal plants.* Radix veratri, tobacco, and some obsolete vegetable drugs.

d. *Inorganic substances.* Arsenic, mercurials, sulphur, dilute sulphuric acid (Mörlin recommends this last 1:24 in horse-itch).

Of these remedies the most useful are: for *sarcoptes-itch*, especially creosote, carbolic acid (1:10-20), sublimate (1:50-100), tar liniment (Pix. liquid., sapo. virid., spirit., aq., āā p. alq.), balsam of Peru, styrax, petroleum, ichthyol, (of doubtful efficacy).

For *dermatocoptes-itch*: creosote, carbolic acid (usually the raw acid for sheep), decoctum tabaci, arsenic solutions (for sheep; very efficacious, but extremely dangerous), oleum cornu cervi.

For the *dermatophagus-itch*, carbolic acid, tar liniment, benzine (1:5 sapo. virid.), petroleum.

16.—Demodex.

Three species of demodex are found in the skin of our domestic animals. Demodex folliculorum canis, demodex phylloides suis, demodex cati.

The first species is extremely like the demodex folliculorum hominis, but is somewhat smaller (0.2-0.3 mm. long), and has a more squarely-shaped head. They live exclusively in the hair follicles and the sebaceous glands of the dog, in which they may be found to the number of 30–60, (exceptionally as many as 200); they then cause a violent impetiginous dermatitis with defluvium capillorum, thickening of the skin, and crusting. The bluish-red pustules show the site of the sebaceous glands, and on pressure a bloody purulent mass can be evacuated, in which numerous acari will be found. In this severe form, the eruption begins as a rule on the head, spreads gradually over the entire body, and finally causes general emaciation and death.

In rare cases the eruption remains limited to certain spots, (especially around the eyes), and appears as moderately intense dermatitis erythematosa with desquamation of the epidermis.

Itching is usually absent in this malady; in fact, the dog generally shows evidences of pain when the affected parts are rubbed. Demodex canis, according to Zürn, is sometimes transferred to man, and then causes an itching, pustular eruption, which, however, is easily curable. The experiments made by Gruby, of transferring demodex hominis to the dog, caused falling off of the hair, but no dermatitis pustuloso.

Demodex phylloides suis, causes a pustulo-ulcerative eruption in the pig. According to Croker, there appear pin-head to hazel-nut sized swellings on the flanks, neck and breast. These gradually coalesce, and form larger or smaller ulcerations.

Demodex cati has been found in the neighborhood of the nasal openings, and in the fundus of the ears of cats.

Besides this, demodex has been found in isolated cases in cattle, (Faxon, Grimm), and in the Sambur-stag, (Prietsch).

Therapy.—The most appropriate remedies so far known are: balsam of Peru, (Seidamgrotzky), styrax, (Vogel), sulphuret of potassium solutions, followed by cantharidal ointment, (Brusasco), sublimate in 1 per cent. solution, and as salve, (Fröhner); less certain are balsam of tolu, naphtholin, sulphuret of potassium solutions. Only in very mild cases will it suffice to use salicylic acid ointment, benzine ointments, carbolic acid solutions, and ol. juniperi aethereum.

17.—ROUND WORMS.

There now and then occur, in the domestic animals, skin diseases which are caused by round worms. Thus Rivolta, Laulaine and others describe, under different names, a rare skin disease of the horse, in which numerous nodules appear, which sooner or later suppurate and rupture, showing a varying quantity of worms in their interior.

In the dog, Siedamgrotzky saw a pustular exanthem upon the external surface of the anterior and posterior limbs. The cause of this he found to be small embryonic round worms, which had manifestly wandered from the straw of the litter into the hair-sacks.

Similar observations have been made by Rivolta on the dog, and Pflug, Druilly, and Semmer upon the horse.

18.—HÆMATOPINUS AND TRICHODECTES.

The *Hœmatopini* (Pediculi) are blood-suckers which cause a troublesome itching, and hence rubbing, scouring, and gnawing, which may lead to the formation of a dermatitis artificialis. Almost every variety of animal has its own species. Thus the domestic and the wild swine harbor H. urius sive suis; the horse, H. macrocephalus s. equi.; the cow, H. eurysternus and H. tenuirostris; the goat, H. stenopsis; the dog, H. piliferus.

The *trichodectes* do not suck the blood, but feed on the epidermis and gnaw the hairs with their forceps-like jaws. The dog has Tr. latus sive canis; the sheep, Tr. sphærocephalus; cattle, Tr. scalaris; the horse, Tr. pilosus; the goat, Tr. climax; the cat, Tr. subrostratus.

Treatment consists in the application of remedies that either prevent the access of the lice to air (closing up the breathing-holes), or poisons them. To the first belong the fatty oils, especially rapidly-dying linseed oil, ashes, stone-dust, &c; to the latter belong decoctum nicotianæ, unguentum hydrargyri, (cattle are easily mercurialized!), sublimate solution (1:100), flores pyrethri, semen sabadillæ, semen staphidis agriæ, radix veratri, oleum anisi acthereum, (1:10 oil), benzine, petroleum, carbolic acid, (1: 10 to 20), arsenical solutions (1:200), oleum cornu cervi.

19.—IXODES, DERMANYSSUS, PULEX, SIMULIA, ŒSTRUS, OCHROMYIA, LUCILIA, LEPTUS.

The ticks, (Ixodes), especially the females (Koch), occasionally bore into the skins of animals by means of their very complicated suction apparatus. They imbibe the blood, and then swell up into a cherry to bean-sized vesicle. On cattle and sheep, we find Ixodes rednirus; on men, dogs, cattle and sheep, Ixodes vicinus; on men and animals in the American forests, Ixodes Americanus, sive Amblyoma Americanum; on pheasants, Ixodes Dugesii, which is said occasionally to appear on sheep and dogs. By touching the animals with turpentine or benzine we can make them loosen their hold.

The *common bird tick*, (Dermanyssus avium), is found in dung and wood-work of bird-houses, chicken-coops, swallows' nests, and the like. It affects all animals that come in the neighborhood, birds, horses, dogs, cats, and even men. It causes a violent itching, and even, (according to Steinback, Mobius, Prietsch and others), formidable itch-like eruptions. Megnin observed a cat upon whose skin the bird-ticks had acclimatized themselves, so that the animal had become quite emaciated; and Gassner found them in the external auditory canal of a steer, where they had caused an otitis externa.

The genus *Pulex* is represented in our domestic animals by two species, P. canis in the dog, and P. felis in the cat. Both differ from P. irritans in size, being smaller, and P. canis has a circlet of spines around head and neck which are absent in P. irritans.

Simulia maculata, (Kolumbaczer gnats), appear in spring in great swarms on the Danube flatlands, and attack animals and men for the purpose of sucking their blood. These gnats settle on the skin in such quantities that light-colored animals appear quite black; they penetrate into eyes, ears, mouth, nose, anus, vagina, etc., and cause small inflammatory tumors everywhere, and not infrequently kill the animal. Thus, in the Servian district, Passarawitz claims that in 1783, they killed 52 horses, 131 cattle, 316 sheep and about 100 pigs. Little children are also said to have been killed by them.

Œstrus bovis sive Hypoderma bovis, (cattle gadfly), cause in cattle, and more rarely in the horse, donkey and sheep, the so-called Dasselbenlen. The female in mid-summer lays her ova upon the skin of the animals. Later on larvæ appear, which bore into the skin of their host, and then develop in the subcutaneous connective tissues. Then they act as foreign bodies, cause inflammation and supuration, and gradually pigeon-egg sized tumors, which eventually rupture. The larvæ remain about nine mouths in the spaces, then leave them through the opening already formed, and complete their further development in the ground.

Ochromyia anthropophaga, according to Raillet, cause a similar malady in the skin of dogs from the passage of larvæ into thin skin, as does the œstrus bovis in cattle. The nodules reach the size of a hazel-nut before they burst. They are most commonly found on the tail, ears and paws.

Lucilia serinata, (Jennes and Van Laer), which is probably identical with musca Cæsar, causes a disease in Dutch sheep, which is known under the name of "de Vliegenziekte de Schapens," and is caused by the fly in question depositing its ova under the skin in places where it is thin, and especially in the neighborhood of the rectum. The result is a sieve-like piercing, and more or less extensive undermining of the skin.

Leptus autumnalis, (harvest mite) causes not only in man, but, (according to Defrance and Fiedberger) in the dog, a pustular skin eruption. There appear on various portions of the body small red nodules, on which the mites are located. Later on, the nodules coalesce, and finally there are formed quarter-dollar sized irregular round areas, on which the skin is hairless, hyperæmic and thickened.

REPORTS OF CASES.

SOME PECULIAR TERMINATIONS OF POST-PHARYNGEAL ABCESSES IN SOLIPEDS.

By L. C. Wakefield, D.V.S.

In view of giving the readers of the Review a chance for a more extensive prognosis in cases of post-pharyngeal abcesses with diseased guttural pouches, provided they are not called until the animal is in the last stages of the disease, as has been the case in my practice, I subjoin two cases that I have met with lately, as they differ from most cases that I have seen which have proved fatal from starvation. Some time ago I was called to see a twelve-year-old mare. Found her lying down in her box; her owner gave history of her case as follows: "Bought her in a pasture with some other horses a few weeks ago; first noticed that she didn't keep in as good condition as the others, carried her head low and a little to the left, quidded her hay and swallowed with difficulty. She kept growing poor, and to-day had been found bleeding profusely from both nostrils; she bled until she sank from exhaustion and then the bleeding soon stopped." A physician who was present at the time pronounced it hemorrhage from the lungs. An empiric who had been treating her previous to this time agreed with the physician, and left homœopathic medicine, which, in fifteen drop doses three times a day for eight days, would effect a complete cure. Unfortunately, I could not agree with them either in diagnosis, prognosis or treatment. On examining the fauces, could find nothing abnormal excepting a relaxed condition of the muscles. I diagnosed the case as a post-pharyngeal abcess, with an ulceration of the right guttural pouch which had caused a rupture of some artery. I gave a very grave prognosis, and prescribed stimulants, tonics and all the food she could swallow. She soon became stronger, and in two or three days, the weather being warm, she was turned out to graze. On going out to get her at night the owner found her dead, lying beside a large pool of blood. He sent for me to make a post-mortem, which I did the next morning. A shower hurried the post-mortem, but I found a large ulcer in the guttural pouch on the right side, involving the Eustachian tube and tissues as far as the posterior nares. The muscles posterior to the pharynx were infiltrated with pus, and evidences of profuse hemorrhage from arterial branches involved by the ulcer.

The next case of the kind was at the "Malorm Stock Farm." The patient, a five year old Hambletonian mare, had a peculiar greenish discharge from both nostrils; she did not thrive well during the past winter, and within the last five weeks had grown poor very fast, drank with difficulty and had this peculiar greenish discharge from the nostrils. There was soreness evinced on the right side of throat, a peculiar stiffness of the neck with the head inclined to the left and held low. The right ear drooped slightly; there was a slight fetor of the breath diagnostic of necrosed tissue. I took all food from her, had her nostrils washed out and then watched for the discharge, which I found became clear and slightly viscid and was nothing but saliva, which in her efforts to swallow had passed back down her nostrils. Examination of the fauces showed nothing abnormal, but a relaxed condition of the same. Diagnosed a post-pharyngeal abcess, involving the right guttural pouch and Eustachian tube. Prognosis very grave with the probability of another post-mortem. The mare's appetite being good, I allowed her to eat all she could swallow. Gave electuaries of potassium chlorate, belladonna and treacle, also enemas of alcohol and milk; applied counter irritant to throat externally. After she had got more strength I intended to open the right guttural pouch. She was considerably emaciated and quite weak from the fact that the greater part of the food she masticated passed back through her nostrils, when she tried to swallow, thus accounting for the greenish discharge, which was nothing but hay mixed with saliva. On the morning of the third day after my first visit, I found her condition somewhat changed; her hitherto normal temperature was now 104, respiration 25, pulse 76. Diagnosed traumatic pneumonia, caused from ingesta passing down the trachea in the attempts to swallow. Patient had loss of appetite and great thirst; could swallow but very little, and was in considerable pain; she grew rapidly worse and within thirty-six hours death came to her relief. I immediately held a post-mortem, and found a gangrenous condition of the right guttural pouch; the Eustachian tube of the same side was wholly necrosed and the bone surrounding its base was bare. On incising the muscles on the corresponding side, I found an abcess containing ichorous pus, and a necrotic discharge from the underlying bone. The capsular ligament of the occipito-atloid articulation adjacent to the abcess was necrosed, and on opening the articulation, I found the right condyle of the occipital bone and the corresponding articular cavity of the atlas were badly necrosed. The left guttural pouch and adjacent tissues were all normal. On examination of the trachea, I found inside a quantity of saliva and some finely masticated hay which had passed into the trachea during the frequent attempts of deglutition. On further examination I found a violent inflammation of both lungs, which I thought verified my diagnosis; all the other organs were normal.

A SINGULAR CASE OF CRAMP LASTING FOUR DAYS WITHOUT INTERMISSION.

By The Same.

The patient was a large bay gelding twenty years of age of a very nervous temperament; was used steadily for draught work. March 17th I was called by his driver to put back his stifle; his driver said he had always been well. The day before he had worked as usual, but this morning he was unable to back him out of his stall. His off limb was perfectly rigid; he bore his weight on it and rested the other hind limb. I found there was no laxation, no tenderness, no swelling. The affected limb was much colder to the touch than the other; appetite very good, spirits good and everything else about him normal. All the muscles of the limb below the external angle of the ilium were in a state of tonic contraction, and he could not move it from the floor; attempts were made to flex and extend the limb by force, but they were of no avail. Potassium nitras was given in his drinking water, and laxative doses of magnesium sulphas in his feed. Counter-irritants with friction and hot fomentations were applied externally to the limb, but the tetanic rigidity continued without intermission until the fifth morning, when the muscles were in their normal state. The horse went to work immediately without any soreness in the limb, nor has he had any trouble since March 20th, the date of his recovery.

GASTROTOMY IN A ROOSTER.

By W. R. Howe, V.S.

On the evening of Feb. 10th Mr. John Oats brought to my office a fine game cock, which he said had swallowed a bone several days previously, and was sick. On examination a large movable prominence could easily be felt at the breast. After trying and failing to remove it by the mouth, and the owner declaring that the cock was steadily declining and would soon die if not relieved, I decided to operate.

Clipping the feathers over the prominence, I made an incision about an inch long (parallel with the muscles) and right through the walls of the chest, exposing the crop. I grasped the crop with a pair of bulldog forceps; the prominence was easily found, and one clean cut made over it exposed a piece of bone which proved to be a strip from the upper part of the scapula, four and a half inches long, nearly half an inch wide, and averaging over an eighth of an inch in thickness, with edges rounded off as though worn—probably due to the process of digestion. Sponging the parts with a mild solution of mercury bichlo., I closed the walls of the crop with two uninterrupted catgut sutures, and turned the ends in; brought the external wound together with three wire sutures, and dressed with flexible collodion. The next morning the cock appeared bright, and eat well, and has since made a complete recovery.

VESICO-URETHRAL CALCULI.

By the Same.

On Feb. 10th I was called to the Oakwood Street Railroad Co's stables, to see a horse which the Superintendent said could not urinate, but was not suffering much.

Being busy, I sent some diuretic powders and promised to call the next day, which I did. I found a good bay horse, about ten years old, with pulse normal and temp. 100° F. He looked a little dull; hair rough, back somewhat arched, but apparently not suffering any acute pain; appetite fair; a slight dribbling of urine from penis.

On inquiry I found that the horse had not urinated freely for over a year, but had not suffered any inconvenience until within a few days, when he began straining as though desiring to urinate. Appetite had failed somewhat, and the horse became weak. On examination per rectum I found the bladder full, and the animal evinced some pain on pressure. I attempted to pass an ordinary horse catheter; passed freely about four inches, when there appeared to be a stricture.

I got a number nine and number twelve human gum catheter; passed first the small, and then the large one through the stricture thus dilated until I could get a metal mare catheter through. It then passed four or five inches further, when it again came to a standstill. I could then plainly feel and hear the metal catheter strike a stone, but with some manipulation it apparently passed by. Then I took a regular gum male catheter, but could not get it past the stone until I used a wire stillet and bent the point slightly, turning the point downward and slightly to the left; then with some trouble I passed it to the ischial arch, when it refused to go further, but after withdrawing the catheter there was some little flow of urine, and by pressure on the bladder I got considerable urine away. Then I left, to call the next day.

Feb. 11.—Found the horse weaker; no appetite; pulse very fast. Temperature, 104¼° F. Some urine still dropping; sheath and perinæum greatly swollen. I passed the catheter, and got through the first stricture, and after some manipulation I passsd the stone and got as far as the ischial arch, but could go no further.

I now decided to operate, and cut down to the catheter at the arch (the same as for lithectasy); but on reaching the catheter imagine my surprise when I found that it (the catheter) was not in the urethra; but in passing the stone I had ruptured the urethra, and passed up outside of it.

I ordered the horse killed, and made a post-mortem. Following up the urethra, I found the mucous membrane healthy to the first stricture; from there on it was somewhat dark and congested. I found the stone larger than a hickory nut, and about that shape, with many rough projecting points, what, I believe, is called a mulberry calcus. The membranes and all tissue around it were completely broken down, but no external swelling nor anything else to show the condition from the outside of the penis. The catheter had broken through here and passed up alongside of the urethra in the areolar tissue, which was thoroughly infiltrated with urine. This had been the cause of the intense swelling. There were four strictures in the urethra above the stone mentioned, and in each stricture a small stone, varying in size. Mucous membrane of bladder apparently gone or worn off; bladder full of a muddy substance, apparently composed of urine, mucous, and small particles of calcus matter.

OPEN JOINTS—THEIR TREATMENT.

By C. H. Flynn, D.V.M.

The treatment of these wounds has been very gratifying to me during the last year. I think veterinarians have been too prone to condemn animals which are suffering from these accidents.

I have treated these lesions in the true hock joint, in the lower articulation of the hock, the femoro-patellar, the inter-phalangeal and the coffin joint. The majority of these cases have made complete recovery. Some have been attended with anchylosis, and a few have died or been destroyed.

I find it of great importance to get these cases at the earliest possible date, and before constitutional fever has begun. The age and vigor of the patient, as well as ths sanitary conditions and surroundings, have much to do in the success of the case.

My treatment is, in brief, as follows: Place the patient in a clean, well ventilated and drained stall. Have all the litter removed, and insist on the stall being kept clean. Either place the animal in slings, or tie the head so as to prevent lying down. Clip the hair, and cleanse the parts well. I prefer the corrosive sublimate solution, one to the thousand, for a disinfectant.

Should the wound be of two or more days' standing, inject the joint with the corrosive sublimate solution. Now dry the parts with a clean towel and sprinkle the wound with iodoform; over this place a thick layer of absorbent cotton, well filled with iodoform; bandage securely, and keep the patient on a moderate diet, preserving the utmost quietude possible.

Should the bandage remain in place and the animal seem free from pain, leave the bandage and dressing in place from five days to a week; then change it, and should the discharge be little, do not disturb it, but renew the iodoform and cotton dressing, leaving it on for another week.

Should the wound not do well, and ulceration of the articulating surfaces become evident, inject daily with the corrosive sublimate solution, two to the thousand, and apply blisters over the whole joint. I have found the application of the actual cautery to be very beneficial in cases which seemed very intractable.

After the wound has closed, keep the animal quiet for at least two weeks, and then commence to give him exercise on the halter, gradually increasing it. Do not allow him to be put to work under a month.

ŒSOPHAGOTOMY.

By G. W. Butler, V.S.

On the night of August 24th, '87, I was called to see a cow that was choking from an apple being lodged in the lower third of the cervical portion of the œsophagus. After fruitless efforts to dislodge the obstruction by manipulation, the use of oil, etc., I resorted to the use of the probang, which also proved a failure—due, I think, to rupture of some of the muscular fibres of the œsophagus having taken place.

The next morning, after repeating my efforts to dislodge the apple, with a similar result, I concluded to perform œsophagotomy, which I did in the following manner:

After securing the cow's head to a fence post, I removed the hair over the obstruction, and with a scalpel made a clean incision through the skin and œsophagus, about three inches in length. After removing the apple I washed the parts thoroughly with a solution of corrosive sublimate (about 1 to 1,000), and with a tenaculum my assistant drew out the œsophagus far enough to enable me to fasten its cut edges by means of an uninterrupted suture, using silk thread for the purpose. The skin was then brought together in the same manner and a pledget of tow placed over the wound, being soaked in the above solution and held in position by a bandage around the neck.

The cow was fed nothing but soft food, and there was no suppuration after the operation until about ten days or two weeks, when the thread with which the œsophagus had been fastened sloughed out, leaving a small opening through which a little food and water passed when the animal ate or drank. This, however, soon closed, leaving the cow as well as ever. I should have used carbolized catgut suture for stitching the œsophagus, but I did not have it. Had it been used, I am satisfied there would not have been the least suppuration.

During the operation I kept my hands and instruments well saturated with the corrosive sublimate solution.

IMPACTION OF THE RUMEN.

By the Same.

On March 30th, '88, I visited a cow that appeared to be suffering from impaction of the rumen. I administered a cathartic, which caused fluid evacuations from the bowels, but the distressing symptoms of impaction still remained, and the hard impacted contents of the rumen could easily be felt with the fingers. Stimulants were prescribed for a day or two, after which another cathartic was administered, but with no better result.

Rather than resort to rumenotomy (an operation which certainly is accompanied with more or less danger), I adopted a plan which was new to me, at least. I inserted a large trocar and canula through the abdominal muscles into the rumen, and after withdrawing the trocar I passed a strong steel rod through the canula and stirred or broke up as much of the impacted matter as possible. I then injected a quantity of warm water through the canula, and repeated the puncturing and breaking-up process about six inches from the first puncture. Prescribed strychnine in 2 gr. doses twice a day, combined with bicarbonate of soda, and had the satisfaction of seeing my patient in good health in a few days.

While this operation might prove ineffectual in some cases, I believe it would do away with the more dangerous operation of rumenotomy in many others.

ABSCESS IN THE BRAIN, THE RESULT OF STRANGLES.

By the Same.

The subject, a mare four years old, according to the owner's statements had suffered from a severe attack of strangles a few weeks before, but had apparently recovered. She however seemed to thrive badly, and a few hours before I was called began to show serious brain symptoms. The eyes were amaurotic; she walked with a staggering gait and in a circular course, turning to the left, and at the time I saw her she would occasionally lose her balance and fall to the ground. I apprised the owner of my suspicion of abscess in the brain; also mentioned the possibility of the symptoms arising from some other lesion of that organ.

By my request I was notified of the animal's death, which occurred a few hours after I saw her, and I held an autopsy, which revealed a large quantity of pus in the left hemisphere of the cerebum and left lobe of the cerebellum.

I think this case shows that there may be great destruction of brain substance before there are any distressing symptoms exhibited; for, judging from the quantity of pus the brain contained and the short time the animal showed symptoms of brain trouble before death, there certainly must have been quite a collection of pus before any symptoms of brain trouble were manifested.

COLLEGE EXERCISES.

AMERICAN VETERINARY COLLEGE—SPRING SESSION.

The spring session of 1887–'8 at the A. V. C., closed up on the 14th of April with a matriculating class of fifty-five students. During the six weeks that the session lasted, the students received three lectures a day, in the afternoon, while in the morning their time was occupied in clinical studies, practical anatomy, microscopy and chemistry laboratory work. On the 14th of April the class passed an examination in the following branches: The anatomy of the function of locomotion, sanitary medicine, veterinary jurisprudence, horse shoeing, histology, physiology (proximate principles), chemistry (qualitative analysis). This examination will be made obligatory in the future, as the faculty consider it of great advantage to the student.

Mr. Mark Francis, of Glendower, Ohio, has received the silver medal offered by Prof. Liautard for the best examination in anatomy by the junior students.

NEW YORK COLLEGE OF VETERINARY SURGEONS.

The commencement of this institution took place on the 14th of March at the Carnegie Laboratory. The president of the college conferred the degree on the following gentlemen:

Burns, P.	New York.
Culbert, T. S.	Indiana.
Henning, Henry	Pennsylvania.
Kelly, James	New York.
Kenny, M.	“
Mayer, S. S.	Pennsylvania.
McLean, R.	New York.
Orlapp, B. G.	Missouri.
Prathero, Wm. B.	Pennsylvania.
Roberts, Geo. H.	New York.
Schlosser, Chas.	“
Tasme, Aug.	Georgia.

A majority of junior students, having passed their first examination on anatomy, materia medica, physiology and chemistry, were awarded the junior certificate.

Mr. Kenny was awarded the first prize—a gold medal—for best general examination. Henry Henning received first prize in anatomy, also a special prize for the best mounted skeleton of a horse. Aug. Tasme was awarded a silver medal for injected specimen. Geo. H. Roberts, of the graduating class, delivered the valedictory.

The proceedings terminated by a banquet, given by the graduating class, at which the faculty and friends of the college and students were present.

ONTARIO VETERINARY COLLEGE.

The closing exercises and presentation of prizes of this college took place in Richmond Hall, when Dr. Duncan gave the following names as forming the graduating class for the session:

Ackland, Geo. F.	Forfar.
Allis, N. H.	Nyalusing, Pa.
Anderson, J. P.	Guelph.
Anderson, Robert	Comber.
Armstrong, James A.	Stratford.
Austin, David G.	Essex Centre.
Babe, Thomas	Caledon.
Baker, Trayton F. F.	Oakville.
Baker, Wallace L.	Lafayette, N. Y.
Balliett, A. H.	Balliettsville, Pa.
Bell, Charles F.	Arcanium, Ohio.
Berry, Robert G.	Sherbrooke, P. Q.

Bland, Charles	Lincoln, England.
Bland, J. W	Calgary, N. W. T.
Bowker, Glenn	Groton, N. Y.
Bracken, W. J	Brampton.
Booker, Frank	Carlingville, Ill.
Bradley, J. E	Gananoque.
Buckingham, Jabez D	Essex Centre.
Burger, Wm	Hornby.
Burke, J. C	St. Thomas.
Brackin, G. E	Caledon, E.
Campbell, Arthur E	Buffalo, N. Y.
Campbell, James	Strathroy.
Campbell, W. D	Ridgetown.
Carpenter, Howard T	Manhattanville, Kans.
Carpenter, Tom	San Francisco, Cal.
Carter, Geo. H	Guelph.
Chase, Jesse M	Sherwood, N. Y.
Clute, H. P.	West Shelby, N. Y.
Collins, George	Hespeler.
Cook, F. W	Hutchinson, Kans.
Cornell, Chester E	Thedford.
Coutts, J. J	Crosshill.
Coxe, William	Nassagawaya.
Dengler, H. O	Quakertown, Pa.
Dann, William	Lucan.
Davies, Charles	Alton.
Edwards, Edward	Lima, Ohio.
Erb, N. S	Guelph.
Findlay, James J	Williamstown.
Fox, John H	Guelph.
Gable, E. E	Meadville, Penn.
George, J. H	Crampton.
Gilbank, F. G	Birr.
Glass, Wm. H	Australia.
Graham, Joseph	Port Perry.
Graham, Newton	Zephyr.
Gruber, C. D	Obolds, Pa.
Green, David	Ridgetown.
Hagyard, E. W	Lexington, Ky.
Hanbidge, Thomas	Mount Hope.
Heighway, J. G	London.
Hickingbottom, Robert	Balsam.
Hill, James A. T	Chicago, Ill.
Hoffman, Frank W	Waterloo, Ind.
Inger, J. D	Strawberry Point, Iowa.
James, A	Ottawa.
Jackson, A. W	Abingdon.
Johnston, James H	Croton.
Johnston, S. H	Chesley.
Johnston, Benjamin	Davenport.
Johnstone, J. A	Trafalgar.
Kennedy, John T	Bloomington.
Kent, F. B	Bracebridge.
Kimmell, D. E	Greensburg, Pa.
Kydd, W. H	Warren, Ill.
Lake, Constant	Wooster, Ohio.
Lambertus, Joseph	Teeswater.
Lawson, John A	Walkerton.
Leary, Daniel	Kendall, N. Y.
Lindsay, W. H	Hornby.
McCapes, Adelbert	Vermilion, Dak.

McGregor, J. D.	London.
McKenna, W. C. S.	Brampton.
McLean, W. A.	Lucan.
McQueen, E. D.	Port Dover.
McMahon, D. T.	Chicago, Ill.
McDonald, Fred. S.	Toronto.
Merillat, L. A.	Kochs, Ohio.
Millar, John James	Calgary, N. W. T.
Morris, Claude D	North Reading, N. Y.
Mouller, G. D.	Fayetteville, N. Y.
Newby, Thos. B.	Charleston, Ill.
Orr, A. E.	Milford, Kansas.
Paget, Henry A.	Loughborough, England.
Paige, H. E	Amherst, Mass.
Paxton, John S.	Fredricksburg, Ohio.
Phillips, John R.	Dewittville, N. Y.
Porter, Joseph W.	Mount Vernon.
Powell, J. H.	Thedford.
Power, Richard H.	Barrie.
Quin, Abner H.	Edmonton.
Readhead, R. T.	Lowville.
Robinson, Samuel G.	Galt.
Roe, J. S.	Milverton.
Roe, J. A.	Milverton.
Rossiter, A. J.	Salem, Oregon.
Rossiter, Edwin W.	Salem, Oregon.
Rowe, H. M.	Strathroy.
Rowlin, G. H.	Hamilton.
Russell, W. T.	Nashville, N. H.
Schwin, Payson E.	Middleburg, Ind.
Scott, Walter J.	Duncrieff.
Scott, Andrew D.	Duncrieff.
Schaffter, E. P.	Mount Eaton, Ohio.
Shepard, Edgar H.	Geneva, Ohio.
Sherrick, F. W.	Tarrs, Pa.
Sihler, Charles J.	Simcoe.
Smith, R. V.	St. Mary's.
Smythe, T. H.	Grand Forks, Dak.
Speirs, Henry J.	Manitoba.
Stevens, David F.	Mount Morris, Ill.
Sutherland, Geo. H.	East Saginaw, Mich.
Sloan, J. Langtry.	Churchill.
Thompson, James D.	Sharkleyville, Pa.
Thompson, Lewis H.	Strathroy.
Vanantwerp, E. A.	Grand Rapids, Mich.
Walker, Joseph J.	Londesborough.
Walkington, John J.	King.
White, James S.	Elmira.
Wicks, Arthur G.	Springfield, Mass.
Williams, George C.	Fingal.
Wilson, John E.	Thornton.
Zug, Frank M.	Clarence, N. Y.

CHICAGO VETERINARY COLLEGE.

At the fifth annual commencement exercises of this institution, a class of twenty-two candidates received their degrees of D.V.S at the hands of the President of the College, viz.:

Lowman, H. B	Illinois.
Sayre, C. E	Illinois.
Plummer, A	Iowa.
White, H. A	Illinois.
Speilman, Charles	Illinois.
Kingery, S. H	Illinois.
Kraus, J. J	Wisconsin.
Roberts, E. D	Wisconsin.
Farmer, T	Michigan.
Sprengle, W. M	Pennsylvania.
Hilton, Joseph	Dakota.
Shipley, H	Iowa.
McKinney, W. H	Illinois.
Larrigan, O. J	Illinois.
Bush, I. M.	Maryland.
Pyle, H. G	Illinois.
Phillips, S. E	Illinois.
Teegarden. C. E	Indiana.
McLaren, F. J	Illinois.
Ambrose, W. H	Ohio.
Kennelly, S. M	Illinois.
Bretz, S. E	Ohio.

The distribution of prizes followed accompanied by some very appropriate remarks by Prof. F. S. Billings, of Lincoln, Neb.

SOCIETY MEETINGS.

NEW JERSEY STATE VETERINARY SOCIETY.

The last regular meeting of the New Jersey State Veterinary Society was held on Thursday, April 26th, 1888, at Taylor's Hotel, Jersey City, N. J., with Dr. J. C. Corlies, President, in the chair, and a large attendance of members from various parts of the State.

The Secretary read a letter from Prof. Andrew Smith, Principal of the Ontario Veterinary College, in which that gentlemen expressed a desire to attend a meeting of the Association and regretted that business engagements would prevent his attendance on the occasion in question.

A letter was read from Dr. Wm. B. E. Miller, of Camden County, explaining his inability to be present, and wishing the Association all the success the cause demands. The Secretary also announced the receipt of letters from Dr. Voorhees, of Somerville, Dr. Charles Kuehne, of Jersey City, and other veterinarians not present at the meeting.

The minutes of the Newark meeting were read and adopted.

Dr. J. Serling, (graduate of a German college), a practitioner of Hoboken, was elected to membership after considerable discussion. It was held by some of the members present, that although Dr. Serling was a practitioner of Hoboken, yet he resided in New York, and not being a resident, he therefore was not entitled to membership in the State Veterinary Association of New Jersey. Dr. Sattler and others took a more liberal view of things, and upon ballot, Dr. Serling received sufficient votes and the President declared him elected to membership.

Dr. Nayler proposed the name of Dr. Vreeland of Ocean avenue, Jersey City, a recent graduate of the A.V.C., for membership. Dr. Vreeland's name was referred to the Board of Censors.

The subject of contagious pleuro-pneumonia in Hudson County and elsewhere in the State received considerable amount of attention.

It was the sense of the meeting that Dr. Diamond and his deputies were doing good work in Hudson County, and deserved the hearty support of not only every veterinarian in the county and State, but of stockowners and the public generally. Dr. Nayler thought there was too much politics in the matter, and others expressed the fact that if politics were allowed to get a hold, that the usefulness of the Bureau would be greatly impaired.

Much time was taken up with the revision of the Constitution and By-Laws of the Association. The fact that the Association is now so incorporated, under the act of the Legislature for the promotion of veterinary science and art, that only graduates from chartered veterinary colleges are eligible to membership, simplifies the By-Laws greatly.

Article II. of the Constitution was amended to read that the "New Jersey State Veterinary Society has for its object the promotion of fraternal feeling among its members, the welfare of the veterinary profession in general, and of New Jersey in particular, aiming to protect the rights and privileges of practitioners, and to elevate the standard of the profession by scientific intercourse."

Dr. Loblein of New Brunswick, Dr. Mercer of Montclair, Dr. De Clyle of New Durham, and others favored more frequent meetings, and hereafter, instead of tri-annual meetings, the Association will hold quarterly meetings in various parts of the State, and a banquet will be held each year at the annual meeting, which occurs in the month of August.

The order of business at the regular meetings was changed so as to have all the business of the meeting transacted before the reading of papers and the discussion of them should take place. The initiation fee was fixed at $3.00.

Members were allowed the privilege of inviting any person or persons outside of the profession who may have promoted the interests of the Association, to be present at any regular meeting.

The Code of Ethics makes it a grave offense for any member to speak disrespectfully of another, or by insinuation or otherwise to injure his reputation or professional standing. It behooves each member to do as he would wish to be done by, and to cultivate that sense of honor and propriety which should invariably distinguish the professional man. As the Association aims to protect the privileges and immunities of its members, it is expected that they will exercise their abilities in extending and enriching the domain of comparative medicine and surgery, and in advancing the interests of the profession. The Code prohibits a practitioner from prescribing for a patient having been treated by another member of the profession, unless the former has relinquished the case, or that the owner announces that he has dispensed with his services.

In case of consultation, the consulting veterinarian should so far as he can conscientiously, sustain the surgeon in charge of the case, and in no way, either by word or act, promote his own interests at the expense of his brother practitioner. He whose practice is based on an exclusive dogma or who rejects the accumulated experience of the profession, or ignores the aids of anatomy, physiology, pathology and organic chemistry, shall not be considered a fit associate in consultation.

While it is essential for the veterinarian consulted to ascertain the true nature of the case, he should carefully withhold all discussion of the subject till his brother practitioner and himself meet in private for deliberation. When a conclusion is reached it will be the duty of the attending veterinarian to state the results to his client in presence of the consulting veterinary surgeon. No opinions should be delivered which are not the result of previous deliberations and concurrence.

When diversity of opinion exists, it may be proper to refer the case to several veterinarians of good standing, or a court-medical. Still in most cases mutual concessions should render this unnecessary. All discussions in consultation should be confidential. Qualifications, not intrigue or artifice, should constitute the foundation for successful practice.

Any advertisement or announcement beyond the name and address shall be deemed unprofessional. Any advertisement or announcement of nostrums, secret remedies, panaceas, and all things of like nature, shall also be deemed unprofessional. The promising of radical cures and the procuring of certificates regarding the same, or of operations, with a view to advertisement, would be deemed reprehensible. It is also reprehensible for veterinarians to give certificates relating to patent medicines, or promoting their use in any way.

There is no profession whose members are more tempted to practice double dealing than the veterinary, as for instance, in giving of opinions regarding the purchase and sale of horses. Any member guilty of that offence shall be expelled from the Association.

The Secretary was instructed to have the new By-Laws and stationery printed. The Association adjourned to meet at Long Branch, August 4th, when the annual election of officers will be held.

Wm. Herbert Lowe, D.V.S., *Secretary.*

KEYSTONE VETERINARY MEDICAL ASSOCIATION.

At a regular monthly meeting of the Keystone Veterinary Medical Association, held in the ampitheatre of the Veterinary Department of the University of Pennsylvania, President Dr. Zuill called the meeting to order at 8:30 P. M. Fourteen members present.

The minutes of preceding meeting were read and adopted as read.

Dr. Goentner was appointed to read a paper at this meeting, but was absent.

Dr. Hoskins reported case of horse bought subject to trial and which soon died, and the autopsy showed marked lesions in the kidneys which he attributed to the obstinate course that the symptoms of pleuresy had taken, and he thought that the disease of the urinary system was long seated, and that if the animal had lived would have soon succumbed to azoturia, and he thought this an important discovery, throwing much light on the subject, and that if owners would only pay for it, that an analysis of urine should be included in a certificate of soundness.

Dr. Zuill thought the fraibility of the kidneys due to *post mortem change.*

Dr. Huidekoper thought with Dr. Zuill.

There were several other interesting cases reported by Drs. Kooker, Glass and Hoskins.

Dr. Zuill showed a case of collection of sinuses which obstructed the respiration so much as to simulate a new growth in the nasal cavities. The hour for adjournment having arrived the meeting adjourned.

Charles Williams.

VETERINARY SOCIETY OF NEW YORK AND VICINITY.

The annual meeting of the above German veterinary society was held at Meinhardt's Hall, No. 213 Forsyth street, on Tuesday, April 3d.

Dr. A. Kunz, President of the Society, called the meeting to order, in a very appropriate speech, briefly reviewing the history of the Society and relating the good work that has been done by its members, and made many good suggestions in the interest of the members. The regular business was then proceeded with.

The minutes of the previous meeting were read by the Secretary, Dr. J. Serling, and adopted.

Several new members were then proposed.

The meeting then proceeded io the election of officers for the ensuing year, which resulted as follows:

President, Dr. A. Kunz, New York; Vice-President, Dr. L. R. Sattler, Newark, N. J.; Secretary, Dr. J. Serling, New York; Treasurer, Dr. Jos. Kungli, New York; Board of Censors, Drs. Terini, Sattler and Anker.

The meeting then listened to Dr. L. R. Sattler, of Newark, N. J., who announced that he will hold a course of lectures on infectious diseases, the first being on hydrophobia, which was listened to with great interest, as the most accounts given by him were from own observations in the laboratory of Dr. Pasteur.

A vote of thanks was given Dr. Sattler, who then announced that his next subject to speak on would be *glanders.*

AMERICAN VETERINARY REVIEW,

JULY, 1888.

EDITORIAL.

Spinal Meningitis or Infectious Paraplegia.—The contribution of Mr. Comeny to the *Recueil*—the theory he advances—spinal meningitis is well known to American veterinarians—it presents in its usual form but little new interest in all but its etiology—we have thought it parasitic—a change in our past opinion—Mr. Comeny considers it as such—he calls it our epizootic infecto-contagious paraplegia—it is infectious, can we consider it contagious?—observations do not prove it—urine is the seat of culture of the germs—urinary apparatus the place of admission in the organism—why are mares more affected ?—question is open to discussion—many objections to it—an opportunity for pathologists and bacteriologists. Fighting Contagious Pleuro-Pneumonia.—The work done—the number of animals infected—those diseased destroyed—the post mortem—the cost—and in the end good results—stamped out. Value of Veterinary Science to the State.—A lecture delivered by Dr. A. Peters—an important subject well treated before an appreciative audience. American Veterinary College.—Recent action of the Board of Trustees.—A special Act of the Legislature in its favor—new departure in the college—changes in the Faculty—Prof. C. B. Michener's resignation.

Spinal Meningitis or Infectious Paraplegia.—The April and May numbers of the *Recueil de Medecine Veterinaire* contain an article on the infectious paraplegia of the horse, contributed by Mr. Comeny, which presents views of a disease well known to American veterinarians, varying somewhat from those which have found acceptance among us hitherto. But this new theory agrees so well with some of our own opinions, and which, in fact, we have advocated in our teachings, that we have deemed the subject quite worthy of renewed attention and inquiry on the part of our readers.

The subject of epizootic spinal meningitis is not a new one with us. It has been for years a subject of study by veterinarians on this side of the Atlantic, having been with us a comparatively common affection, and the published writings of Professors Large, Law and others are familiarly known and well appreciated in our veterinarian circles. Its symptomatology is well understood, as are also its various sequelæ, with their complications and their treatment, all of which, we may confidently say, are matters possessing no interest for us as novelties, and only become specially remarkable when associated with possible differences in the severity of an attack, or irregularities in the symptoms, or the duration of some special outbreak.

The point least clearly comprehended is that of the true origin, or what may be denominated the final cause of the disease. It is quite true that the initial moment of its appearance has been narrowly watched for by probably every veterinarian, as its encounter has been expected in the course of his practice at peculiar seasons of the year, but that has usually ended the matter—the point has evaded the scrutiny. And still, there has been a patent fact within easy reach, which, though of primary importance, has seemed constantly to invite interpretation, and which perhaps only requires due collation and adjustment to furnish all the solution needed. This fact is the common co-existence of cerebro-spinal meningitis with the peculiar typhoid affection which veterinarians designate as influenza, and which, in the estimation of some observers, is simply a nervous form of the latter disease.

We have for some years past been persuaded that the names employed to designate that form of disease were lacking in correctness, and now, in acknowledging the error of our former theories of the supposed pathology of the affection, as we then considered it, we wish to be understood as rather stating an opinion which we would express tentatively, with a desire that some of our pathologist friends would bring it under their critical scrutiny with a view to ascertaining to what degree it may be borne out, or wherein it may need modification and correction. We consider the paraplegia which is observed in the affected animals to be simply the result of the presence of certain germs in the organism, whose nature and mode of introduction should become the special aim of pathological research, and the discovery of which, when it shall have been effected, will prove to be the solution of the problem.

In this article of Mr. Comeny, he proposes to consider the disease as "an epizoötic infecto-contagious paraplegia * * * a denomination," he says, "that is offered until micro-biologists have discovered the specific microbe, with its nature and its mode of introduction and culture in the organism of solipeds."

The history given by the author of the few outbreaks he has observed, and his description of their symptoms, their duration, and their termination, correspond accurately with other reports of spinal meningitis as it has been seen in the United States, and his subdivision of the disease into the three forms of *sub-acute*, *acute* and *sus-acute*, which he mentions, corresponds to our various forms of gradation, from the milder attacks to those which terminate rapidly in brain complications. We must, however, notice a great difference between Mr. Comeny's opinion and our own touching the question of etiology. While we may to a certain extent ignore the agency of the pre-disposing causes which the author seems to accept, to the extent, at least, of allowing for the effect of the mode of feeding, the quality of the water, the external temperature, the condition of the animals, etc., we agree with him in accepting the doctrine of a single determining cause in "a specific germ."

But we cannot so readily agree with him in accepting the theory of contagion, as he states it. Indeed, as the result of our experience and our observation, and with abundant corroboration from others, we believe that positive evidences of contagion are yet to be discovered, if ever. If the disease is contagious, how is it to be explained that the introduction of affected animals into stables where the disease had not previously existed has not been followed by its appearance amongst the healthy stock in those stables?

According to Mr. Comeny, the introduction of the specific germ takes place through the urinary passages, and he supports this theory by referring to the alleged fact, that (on that account) a majority of animals affected are mares. And he claims that "the bladder is the place or seat of the most prolific multiplication of the infectious germ—from there it reaches the ureters, the kidneys, the surrounding tissues; then enters the rachidian canal and reaches the spinal cord." * * *

In all probability, this explanatory theory of the writer is open to many objections, but we still hold that the point of essential importance is the parasitic nature of the disease. Moreover, if we cannot admit its contagious nature, neither can we ignore its infectious nature. We can understand that an animal exposed to the influence of the germ and to its introduction into his system may become affected with the disease, but the identification of this germ, and the mode by which it acts and gives rise to the peculiar manifestation of loss of nervous power as it does, are matters upon which sufficient light has not yet been shed, and which still wait for some studious and fortunate pathologist to elucidate, and by so doing win distinction and honor.

FIGHTING CONTAGIOUS PLEURO-PNEUMONIA.—The labor undertaken by the Bureau of Animal Industry in its efforts to "stamp out" contagious pleuro-pneumonia in the States where it has become established, and has been for so many years practically tolerated, is something to which the term herculean may fitly apply. Even veterinarians not familiar with the scope of the enterprise cannot correctly estimate the greatness of the attempt. A proximate idea may be formed, however, from the following table, which we obtain from the report of the Chief of the Bureau, Dr. Salmon, and which will show conclusively the faithfulness and energy exercised by the officers of this branch of the Bureau of Agriculture, in the performance of their onerous and not always pleasant duty in the premises.

Character of work, &c.	*Ill.*	*Va.*	*Penn.*	*N. J.*	*Md.*	*N. Y.*	*Total.*
Herds inspected	140	13	198	3,057	4,008	5,082	12,498
Cattle inspected	285	297	31,422	34,581	23,080	40,932	130,697
Cattle tagged	——	——	16,812	5,391	6,407	61,327	89,937
Herds found diseased	——	1	14	144	35	142	336
Animals in diseased herds	——	39	111	1,451	641	2,759	5,001
Animals diseased, physical examination	——	6	32	391	71	445	945
Post mortem examinations	1,712	103	2,929	1,705	2,242	9,010	17,701
Animals diseased on post mortem.	——	45	59	332	326	1,452	2,214
Premises disinfected	1	2	36	72	83	670	864
Diseased animals purchased	4	44	45	830	310	939	1,672
Paid for diseased animals	$81	$719	$958	$8,513	$8,285	$21,371	$39,864
Exposed animals purchased	129	52	62	530	647	2,031	3,451
Paid for exposed animals	$2,408	$601	$1,384	$15,437	$15,952	$41,588	$77,371
Average for diseased animals	$20	$16	$21	$25	$26	$22	$23
Average for exposed	$18	$11	$22	$29	$24	$20	$22

TOTAL EXPENSES OF THE BUREAU.

Months.	*Salaries.*	*Traveling expenses.*	*Miscellaneous.*	*Affected cattle.*	*Exposed cattle.*	*Total.*	*Number of Cattle*	
							Affected.	*Exposed.*
January....	$12,754	$2,538	$2,436	$2,386	$4,980	$25,096	94	166
February...	17,526	3,006	1,922	3,480	9,419	35,355	165	420
March.......	19,743	3,323	2,893	8,100	13,202	47,263	350	554
April........	22,661	4,278	1,884	14,281	28,997	72,102	594	1,350
May.........	27,011	4,960	2,739	11,670	22,831	69,213	470	961

This entire result was accomplished in six months, and within that period nearly one hundred and fifty thousand animals were inspected, figures which excellently illustrate the fitness of the title of the Bureau of Industry. Yet there is one comparatively moderate feature pertaining to the work, and that is the cost in money as compared to the results obtained.

The State of New York, as might be anticipated, appears on the record with the largest share in the number of animals inspected and of those found diseased, and consequently of the expenses incurred, but it is a gratifying fact, withal, that little by little we are getting rid of pleuro-pneumonia cows, and though the work may now and then meet with interference, the day is not far off when we shall be able to congratulate ourselves upon being comparatively, and indeed, entirely free from the plague. It is true that money will be needed, but it is also true that there will be a necessity for a continuation of the services of the industrious workers now engaged by the Bureau, and especially of their able leaders Dr. Salmon and Prof. Law, but no doubt all these can be secured.

"THE VALUE OF VETERINARY SCIENCE TO THE STATE," is the subject of a lecture recently delivered before the Massachusetts Board of Agriculture by Dr. Austin Peters. That the subject is one of no little public importance, as well as private interest, we need not stop to say, nor that it received justice at the hands of the lecturer, and was heard with true appreciation by the interested company who composed his audience. Beginning with a prefatory reference to the history of veterinary education in Europe, with a glance at existing English and American schools, the lecturer enters upon the subject of the work done in the prophylaxy of animal plagues, and the especially good results accomplished by Pasteur, to whose labors a great deal of well-merited praise is awarded. Continuing, he offers a series of well considered remarks upon such of the contagious diseases as have been, or are now, prevalent in the United States, in which he does not fail to accord due credit for the efficient labors of the various existing American organizations holding the subject within their purview, such as the Bureau of Animal Industry, the Treasury Cattle Commission, etc., etc., and, referring cursorily to some of the more important of the diseases, as pleuro-pneumonia, glanders, tuberculosis and dourine, the lecture is brought to a close by urging upon the attention of his hearers three important departments of useful labor, in which the special functions of veterinarians may become productive of an amount of practical advantage to the State not easily estimated. First, the field which they are called to occupy as official advisers of State and Territorial boards of health; second, as inspectors of meats; and third, as army veterinarians, in respect to which position Dr. Peters very urgently recommends the recognition which is extended to the veterinary surgeon in European armies, and for which our American colleagues are so persistently asking for their brethren at home.

This presentation of the claims of veterinarianism by Dr. Peters could not fail to prove an occasion of great interest to his hearers, and it seems an obvious suggestion that if other veterinarians throughout the country would pursue a similar course, the effect upon the popular mind would soon become manifest in winning for our profession the intelligent appreciation to which it is entitled from all classes of the community.

American Veterinary College.—In a former number we laid before our readers an appeal addressed to the people of the State of New York for their contributions to a building fund for the benefit of the American Veterinary College, and it gives us great pleasure to say that the responses which have been received have, up to the present time, proved to be of a nature so promising and satisfactory that the Board of Trustees have felt it to be incumbent upon themselves, as well as due to those who have manifested so liberal an interest in the new movement, to proceed further, and to still more strengthen their position before the public. With this view they have succeeded in obtaining the passage of a special act by the Legislature, authorizing the entire reorganization of the college, together with a legal recognition of the work already accomplished by the institution, with such additional privileges as will suffice to place it upon a footing of equality with the best schools in the country, if not indeed endowing it with some privileges which will place it in advance of most of its colleagues.

The announcement for the fourteenth year of the existence of the American Veterinary College is before us, with its new charter, and we find in it an ample and clear statement of the objects chiefly contemplated by its officers as most desirable of accomplishment by the members of the classes who shall hereafter attend its sessions, and seek its diploma. The principal point of interest is that which relates to the requirements for graduation, which are now regulated by law, and which will require a full three years' course of medical and veterinary study, as a preliminary condition of examination for the degree of matriculation. This is a long step in the right direction, and one which goes far towards satisfying the long expressed desire of the veterinary profession at large for a better and more thorough standard of education.

Changes in the Faculty.—Professor C. B. Michener, for a number of years a member of the faculty of the American Veterinary College, as Professor of Cattle Pathology, Obstetrics, Materia Medica and Therapeutics, has retired from his connection with that institution. Hereafter, the various branches formerly supervised by him will be placed in charge of two separate chairs, one of which will be known as the professorship of Cattle Pathology and Obstetrics, while the other will constitute that of Materia Medica and Therapeutics.

Another Death from Glanders in Man.—Dr. E. R. Allen, from Kansas City, has sent us the history and report of the disease of a man, T. Turner, who has died from glanders after a week of suffering. The poor man was in the habit of doctoring glandered horses, and for a remedy blew salts from his mouth into the animal's nostrils. He inoculated himself in some way and death was the result.

ORIGINAL ARTICLES.

THE VETERINARY PROFESSION: ITS OPPORUNITIES AND NEEDS FOR THE FUTURE.

By W. Y. Williams.

(*Continued from page* 119.)

No college advises its students, after graduation, to insert on their professional cards that they graduated at this college, requiring eleven months attendance, or that college, requiring nine months. We do not believe that any of these "old" colleges are over-zealous to impress upon the public mind these facts, knowing too well that the more enlightened portion of the public would not approve of it.

We grant that there are those of us who are in successful practice—and we note, too, that some colleges refer to the success of their alumni as a recommendation for their college—but most of what we are we owe to hard, earnest study in the wide field of experience, after graduation, and if aught be due to the credit of the college, it is merely to the rudimentary groundwork, to imperfect outlines imparted to us there, serving as a rickety foundation, which we have to remodel to some extent before we can safely build upon it.

Turning now to the future, we may safely assert that, to the young man of to-day, well equipped with integrity, energy and brains, no profession offers a brighter prospect for honor, usefulness, comfortable income and even wealth than that of veterinary medicine. The empiric of the past and present boasts most of his power to cure, his specialty consisting largely of imaginary diseases, and our profession, born largely as a more worthy successor, to furnish better and more scientific treatment for animal ailments, has been too narrowly confined to this channel for our highest good, but this field still offers grand opportunities for usefulness and reward. The increasing number and value of live stock demands of us, and offers due reward for, higher knowledge and skill in the treatment of their maladies.

Diseases hitherto unmanageable, or treated only at a loss to the owner, must be studied carefully and rendered more amenable to treatment; and throughout the entire category of diseases we may amend and improve the treatment in a manner to render our services more satisfactory and mutually remunerative, and by our increased skill and judgment elevate our profession in this respect to a far more honorable position than we now occupy.

Hereafter, also, the veterinarian can and must be a humanitarian. Closely interwoven in the higher sentiments of every enlightened people, there exists a tender, beautiful, ever extending feeling of humane sympathy for the sufferings of the lower animals, especially of those so inexorably faithful as servants, or true as companions, as are most of our domestic animals. We can and should, when occasion permits, arouse public sentiment in this regard, and in our own work we should study how best to alleviate and avoid suffering, as well as to save money to our patrons.

We very much fear that, as a body, we have been habitually far too inhuman in our operations and methods of treatment, sometimes from lack of appliances or the attendant expense, but in too many cases, from a fundamental want of true humanitarian ideas. Possibly the opportunities in this direction offer poor financial inducements, but a careful application of humanitarian principles in our work insures to us an ample reward by nourishing sentiments of inestimable value in rendering men truly happy and contented.

The ever augmenting menace to national wealth, through the ravages and spread of contagious diseases of animals, must necessarily afford honorable and lucrative employment to a large number of veterinarians, by National and State Governments, to determine the nature and causes and devise means for the control and extirpation of these dread maladies. Already there is a considerable number so employed, limiting their operations mainly to the extirpation or control of pleuro-pneumonia and Texas fever in cattle and glanders in horses. The enlightened public is beginning to recognize the importance and effectiveness of their work and will be ready, as soon as we have sufficient trained force to offer, to enlarge the scope of their operations and ask us to control the ravages of many others of the long list of contagious diseases of animals.

No country in the world can boast of a longer or more complete list of contagious diseases of animals than ours. We have, or have had, in cattle, pleuro-pneumonia, foot and mouth disease, Tevas fever, anthrax and tuberculosis; in horses, glanders, strangles, several serious contagious or epizootic fevers, a mild form of venereal disease, and have lately completed the list of known contagious diseases of this climate by adding and giving a foothold to equine syphilis or maladie du coit, a malignant, destructive venereal disorder; in sheep, foot rot, scab and others; in the pig, cholera, trichina, anthrax, tape-worm; in the dog, rabies; in fowls, fowl cholera; and in all a number of minor parasitic disorders. If to the above we would add the Russian cattle plague, or rinderpest, the list would be complete.

Many, if not all, of these diseases, must eventually be referred to the veterinary profession for control or extirpation, affording inexhaustible fields of research, which are now occupied only by a few such men as Pasteur, of France, and in our own country, Salmon, Detmers and Billings. They are doing noble work, but their numbers can be increased without detracting from the usefulness or renown of those now in the field.

The veterinarian of the future is destined, also, to be a useful and appreciated guardian of public health. It is generally well known that a large proportion of the meat and milk, especially that sold in large cities, is unfit for human food, endangering the health or even life of the consumer, and the learned veterinarian may render an important service by indicating what is or is not suitable for human food, or by directing such reforms in the care of meat or milk producing animals as would insure healthy products.

Highly important, also, are the talents of the skilled veterinarian, when employed to prevent the transmission of serious and fatal contagious diseases from animal to man; either by extirpating or limiting the spread of these diseases among lower animals, or as Pasteur and his followers now propose, to rob them of their horrors.

Pasteur may go on in his work and accomplish additional wonders. We believe and trust that he will, but we have also other grand opportunities before us, by devising and executing means for preventing the necessity for Pasteur's treatment. All honor to Pasteur for discovering and demonstrating a preventive treatment for rabies in man, but is it not equally possible and desirable in many cases to prevent the disease by recognizing it early and destroying the animal before it has inoculated the man, or—as far too frequently happens when persons are bitten by really healthy dogs which are subsequently suspected to be hydrophobic—may we not render a great and noble benefit to the terror-stricken patient and his family by determining and demonstrating the animal free from rabies? Scarcely less terrible and loathsome, when conveyed to man, is the dread disease glanders, which of late years has become so widely disseminated among the horses and mules of our country, that we are becoming quite accustomed to hear of unfortunate men who have contracted the deadly disease by handling affected animals; these accidents, in a large number of cases, being directly chargeable to the criminal ignorance or greed of gain of some unprincipled empiric by prescribing treatment to be applied by the owner for the cure of the disease.

Human and animal tuberculosis (consumption), it has been demonstrated are identical, and transmissible from animals to man, and since we well know that this disease is widely prevalent in cattle and especially milk cows in crowded city dairies, the early detection of this disease and the prevention of the sale of the meat or milk of such animals for food, becomes a privilege and duty of the highest order to the veterinarian. Like benefits may be conferred by detecting trichina of pigs in the living animal, and preventing the consumption of the flesh as food.

In the attitude of guardian of the public health, the veterinarian necessarily comes in close contact with the medical sanitarian, where the two must at times work hand in hand, and here at least is an opportunity which, properly appreciated, must unavoidably place us side by side with the medical profession.

We can then be of service to the individual stock owner by skillful treatment of his live stock; to the nation by controlling or extirpating contagious diseases of animals; to the noble sentiment of humanity by relieving the suffering of animals, and to the public health by preventing the consumption of unhealthy animal food or preventing the transmission of animal diseases to man.

Here then are vast opportunities for usefulness, for affluence, honor and distinction, abundant work for willing hands, boundless field for enthusiastic research, which must yield rich results to the earnest and conscientious student, and as to room there is plenty of it, most of these vast fields being comparatively unoccupied, giving the student full range and choice of field or location.

What need we do or have, to realize the benefits of these opportunities? We might answer briefly by saying, more and better men. Our rank and file to-day is not what we need for to-morrow. We are now what the demand has been, but we are not competent to grasp fully the opportunities of the future. The future demands a veterinarian who shall be a genuine scholar, with a broad, liberal preparatory and collateral education, to expand the mind and the better enable him to appreciate scientific theories and facts, and give him a standing as a man of learning, and then he should be deeply and thoroughly grounded in veterinary science, not hurriedly crammed for a loose examination, but be truly and ineffaceably learned in every branch of veterinary knowledge.

For these improvements we naturally turn to our colleges. What we have denominated the new are probably doing now all that public sentiment will at present support, but the numbers of students are so small, compared with the "old" schools, that their influence is largely hidden.

With the public sentiment which has largely controlled the character of applicants for veterinary honors, the old schools have accomplished a great good, which we hope will always be appreciated, but times and public sentiment change, and the "old" schools seem like adamant. Some of them have existed more than twenty years, without increasing their teaching force or length of course of study, or advancing their requirements for matriculation or graduation.

If not now, when will the time for an advance occur? The experience of the "new" schools indicates that there are students who are willing to take a full three years' course if it is asked of them. Some may say that many veterinary students are too poor to afford a three years' course. We answer that the student in this country, with such advantages as we all enjoy, who has not sufficient energy and ability to devise ways and means to thoroughly educate himself in the profession of his choice, will never prove either a boon to the profession or credit to the college which graduates him.

Others may say that three years' attendance at college is unnecessary, that one session of nine months, or (still worse) two sessions of four and one-half months each, will suffice, relying upon the argument that but a few years ago only two sessions' attendance was required in the colleges of other countries; but do they remember also that the profession was then in its mere infancy? or would they expect, because a certain amount of food sufficed for a new-born babe, that it would likewise be sufficient for the mature man at arduous work? Enough and more has been added to veterinary science in the last decade than can be crammed into the average student's head in nine months, without teaching him what was previously known.

We need, also, a strict application of the advertised requirements of good moral character, for nothing is more essential to the proper standing of our profession than strict, straightforward morality and honesty of the individual. We should be honest and open in our transactions, and in opinions of matters where our decision is asked.

The "old" colleges should lay aside their laxity in matriculation examinations, and demand at least a strict common school education in all the branches, instead of admitting men as they now do, who are not sufficiently advanced to spell gut without two "ts."

Once in college, as before said, it is important to see that the student does not get out too quickly, so as to appear that in his haste to get in he had slipped on the threshold and slid clear through without pausing long enough to have his clothes smell of the dissecting room. It matters not whether one school teaches its students as much in nine months as another does in eleven months or no, the fact remains that the time is shamefully and indisputably too short, and that when a college faculty certifies to the public that such students are fully qualified to practice veterinary medicine and surgery, the members of that faculty assert that which they themselves do not fully believe.

We believe that public sentiment now demands an advance in the requirements of these "old" schools, and that they should be assisted with substantial financial and moral support by the government and by stock owners, as a joint protection of our live stock and professional interests. With well endowed and financially independent colleges, we want the most modern appliances and conveniences, good material for clinical study and really *live* professors and lecturers—not old fossils like one we know, who has apparently never advanced a peg since graduation, and to-day practically teaches his classes that the proper time to puncture a horse to relieve tympany is after death, so as to reduce the danger of traumatic peritonitis to a minimum; and if there should be a corner in linseed oil, opium and turpentine, we can't imagine what he would do for a colicky horse, unless he would wait for the corner to break.

The only lecturer on veterinary sciences salaried by the State of Illinois is said to reside, possibly sometimes moves, and is suspected of having a being, forty miles distant from where, a few months ago, there existed a serious outbreak of maladie du coit, the first well authenticated outbreak, so far as we are aware, of this malady in any English speaking country, and yet that professor failed, so far as we can learn, to show sufficient enterprise to travel forty miles to see this rare and interesting disease, but continues lecturing upon the subject, following erroneous descriptions and ideas of English writers, who had never seen the disease, which he could have corrected by actual observation; but the best marked cases are now destroyed and a golden opportunity for professional investigation has passed by unavailed of. It is said, also, that this same professor, although invited to do so, failed to see for himself or induce his students to see the recent serious outbreak of pleuro-pneumonia in Chicago.

For the fullest realization of our opportunities we need, and should encourage, that liberal support of the public press which we have hitherto enjoyed.

We have already expressed our disapprobation of indiscriminate gratuitous prescriptions, and feel that the need of them (if there was ever need) has passed, but we can still offer much for publication which will be read with interest and appreciated by the public, and prove of far greater service to them than gratuitous recipes. Yes, we need the support and good will of the press, and should court these favors by contributing whatever we can to enhance the value of the press to the public, without in any way violating professional propriety or interfering detrimentally with the standing or patronage of any worthy veterinarian, however humble.

To more fully occupy the vast fields of usefulness spread out before us, we need also laws protecting the title of veterinary surgeon, and securing its exclusive use to properly qualified veterinarians, letting the empirics rest upon their own merits under the title of farrier, horse doctor, or almost any other name, which they can have copyrighted, for all we care. These laws should be so framed as to afford equal protection to profession and public, as it is important for a stock owner to know whether a man be duly qualified or not, and that the profession should not be judged harshly on account of the acts of ignorant, worthless empirics. All non-graduates who have, under difficulties, attained fair skill and knowledge, should, after due evidence of such qualifications, be allowed the same privileges and title as ourselves, while those not competent should be debarred from using our title by severe penalties, and the source of supply of empirics should be cut off by allowing no more to establish themselves in the State.

And then, the further supply of poorly educated veterinarians should be prohibited by law, and notice given to colleges that if they would have their graduates practice in this or that State they *must* advance their standard of education to correspond to the demands and needs of the times. This continuous outpouring of poorly educated veterinarians is too pernicious an evil to be allowed to exist longer.

Finally, if we would see our profession in its true position, we should not forget ourselves. Considered as a whole, and giving due weight to our educational advantages and to the state of public sentiment at the time of our graduation, we have done nobly, but we need to do far better, we need to advance and get fully abreast with the times. The school of every day experience offers rich opportunities for study and observation, both upon the living and dead animal. We should train ourselves to be close observers of the course and symptoms of the various cases coming under our observation, to better insure a safe diagnosis, treatment or prognosis in the future.

The post-mortem study of disease is far more available to us than to the medical practitioner, there being no adverse sentiment in our way; so that we should make a careful post-mortem study of most of our fatal cases, and should allow nothing but the most urgent duties to interfere with our plans.

Veterinary journals we should not only read regularly and carefully, but each of us should try to assist in making them instructive by offering what we can for publication, which is likely to prove of interest to our fellow practitioners, and such cases of interest do occur in the practice of every veterinarian. By publishing such cases, we would not only confer a favor upon the profession but would benefit ourselves as well by being compelled to classify and arrange our thoughts, perhaps search for new thoughts, and thereby impress the thoughts of the hour indelibly upon our minds.

Let us then lay aside jealousies and animosities, if they exist, between the graduates of the different colleges, and work earnestly and fraternally for the advancement of our profession and ourselves.

THE EFFECTS OF "LOCO-WEED."

By Olaf Schwartzkopff, V.M.D., U. S. Army.

In the issue of the American Veterinary Review of March I notice an article by L. E. Sayre, Ph.G., upon the so-called "loco-weed," as it affects animals. Having had experience with the matter, I think it a debt to our science to give the results of my investigation too, because they are quite different from those of Mr. Sayre.

Coming two years ago to western Texas, I at first had some skepticism about the marvellous teachings of the Mexican "cu_raneros," which are more or less believed by farmers and other people of the country. Mixed up with a great mass of superstition from old tradition, there is still some truth in this belief. There are phenomena in this southern country and climate in relation to animals, not yet known to or explained by veterinary science. Among these are the physical effects of the loco-weed, here shortly called by the Mexican name, loco, (crazy.) This plant grows all over western Texas, but I doubt it present in the deep, flat south-western countries; in Brownsville, Rio Grande, I either saw it, or heard of it.

The first animal I saw affected by the loco-plant was a Texas pony in Fort Clark in November, 1886. A professional examination showed the following very marked symptoms while the animal was at rest: a marked dilatation of the pupil, as powerful as caused by atropin; general decreased sensibility to mechanical irritation; slugginess in motion and inability to judge properly as to distance and as to the nature of common objects—in consequence a great mental excitement. Wishing to become acquainted with that plant which produces such condition, the owner of the horse next day brought me the loco-plant; gave it to the horse, which had not been fed; he ate it. I could not recognize the plant, or classify it, being without the necessary botanical works. Through Mr. Sayre I learn it is "astragalus molissimus." His description covers exactly that of the plant growing here. According to the dilation of the pupil, I used the antidote of atropin, morphia sulph., applying it in repeated strong hypodermic injections. The effect was very plain: the pupil contracted and the horse's bearing became more sensible. Repetition of the treatment, with proper food, resulted in quieting the horse and in making him act sensibly within six days. The owner of the horse, a cowboy, fearing doubtless pecuniary obligation to me, took him secretly away and I lost sight of the case. His being able to do so is manifest proof that the animal had recovered his usefulness.

The symptoms described by Mr. Sayre are mostly correct, but some are exaggerated. That a locoed animal soon comes to prefer it (the plant) to any other food, and that the nutritive energy seems to be paralyzed, is contrary to my experiments. In January 1887, I fed a locoed donkey, who was sick for several months, for two days with grain (oats); he took this to him rare food, with considerable appetite and refused with a show of nausea the loco-plant. Here are miles of loco-weed, but no animal eats it, because there was during this winter plenty of grass, etc. The popular belief in the crazy or mad character of the symptoms caused by eating this plant I cannot agree with. A veterinary surgeon who knows about hydrocephalus, hydrophobia, etc., cannot confound the effects of this poisonous plant with such classes of diseases.

In February, 1887, a farmer called me to a very severe "locoed" horse. He told me that he lost several horses through the weed in the last few years. I could not get near the horse for examination or application of morphium, which I wanted to try again. The farmer shot the horse for autopsy, which I undertook at once. Result: Horse in poor condition, shot through the heart. On opening the cranium, I found the large sinuses were filled with a straw-colored fluid. Vessels of the pia mater injected. The gray brain-substance reddened and ædematous and cut surface glistering and moist. On the base of the brain, inside arachnoidæ, about one teaspoonful of a pinkish fluid. Medulla oblongata and parts of cord taken from cervical and lumbar regions; œdæmatous in appearance and moist in cut surface. Thoracic cavity: serous membrane normal, lungs normal; heart endocarditic in slight degree; aorta destroyed by the bullet. Abdominal cavity: stomach partially filled with ingesta; small intestines normal, no sign of irritation could be detected. Liver normal; kidneys normal; bladder half disturbed with urine of normal color.

These are different results from those obtained in the autopsy of the cow made by Mr. Sayre. He says, in page 558, "Through the entire length of the intestines, there *seem* to be a degeneration of tissue, being on the inside peculiarly soft. The peritoneum and omentum were inflamed, and throughout were found tumors about the size of a pea, which were fleshy in appearance and of a fibrous matter!

To my mind, these were either tubercles or fibrinous exudates remaining from a peritonitis. At page 559 is said: "Evidently the disease was one of the mucous and serous membranes, which would account for the nervous and debilitated condition of the animal. I differ with Mr. Sayre. The effects of the loco-plant are not what he describes. The weed produces purely the chronic effect of a poison on the brain and medulla. My conclusion is that we have to deal with an unknown medicinal agent, having narcotic and mydriatic properties. For better proof of my deductions, it is necessary to obtain the active principle of the plant by chemical extraction, which I have not the facilities to do.

The prescription of Dr. Harding for locoed animals, on page 559, I really cannot understand. It is not adapted to neutralize to' effects of the plant, in view of the limited pathological knowledge we have of the disease.

My facilities for scientific investigation in my position as veterinary surgeon of the army, are very limited, but the little I am able to glean I desire may not be lost to the profession. Therefore I will be happy to send specimens of the loco-plant for experiments to those colleagues who might be willing and able to do such work.

IS TETANUS CONTAGIOUS?

SOME RECENT DISCOVERIES IN THE PATHOLOGY OF THIS DISEASE.

Reviewed by Roscoe Bell, D.V.S.

Unlike many of the neuroses, tetanus is a disease which veterinarians are often solicited to treat, and it is one whose etiology has ever been a guess or an absolute blank in the mind of the practitioner. To most men who have had any experience with tetanus, (and who has not?) the question conveyed in the caption of this article will cause an audible reply in the negative, their entire experience going to illustrate that the query is ridiculous. But recently the English periodicals—notably Dr. Fleming's *Veterinary Journal*—have devoted much thought and space to the experiments of eminent bacteriologists upon the pathology of the malady, and, although the distinguished editor of the *Journal*, in the first instalments, took pains to state that his whole association with the disease was against the theory of contagion, yet before all the accumulated researches had been published, if he were not an absolute convert to the new order of facts, he, at least, occupied a neutral position upon the subject.

The late experiments of Dr. Shakespeare, of Philadelphia, detailed before the International Medical Congress, has brought the matter more prominently before the profession, while in Europe not only have the micro-pathological workers obtained positive evidence of its transmission through the medium of a virus, but the veterinary surgeons have been of even more practical utility in the study of its character by means of the cultivation and isolation of microbes.

I wish only to give the readers of the REVIEW a hurried *resumé* of what has been accomplished within a short time past by collecting the substance of experiments and the conclusions of the experimentalists, with a hope that we may in this country add something to the great advance which has been made by those of our sister profession and our brothers in Europe.

In 1784 Billroth stated his belief that tetanus was due to a toxic condition of the blood, but Arloing and others transferred blood from animals affected with the disease into healthy organisms and failed to produce a tetaniform condition. In 1882 Nocard injected the cerebro-spinal fluid of affected animals destroyed with tetanus into untainted systems without obtaining any results. In 1884 Nicolaier first detected a bacillus which he declared caused tetanus, and he injected it subcutaneously into rabbits and produced the disease. Rosenbach arrived at the same conclusions from his experiments, though he could not cultivate the bacillus. It was at this time inferred that this germ produced a chemical poison, which, acting upon the nervous system, caused tonic spasms, and Brieger (*Deutsche Med. Wochenschift*, 1887) found a substance in bodies after death from tetanus which he called "tetanin." Davide Giordano (*Veterinary Journal*, 1887,) reached somewhat the same conclusions, but maintained that the specific infecting agent exists only at the locality of the wound, and that the results from inoculation with blood or part of the spinal column of the same subject produced negative results. Dr. Shakespeare, in 1887, experimented upon rabbits with preparations of the spinal cords and brains of horses and mules dead of tetanus. The virus thus obtained was subcutaneously introduced, and also injected beneath the cranial dura mater, after first being cultivated in agar-agar. He concludes that tetanus is an infectious disease, the virus located in the nervous system, and that it may be rendered more active by courses through the systems of different rabbits, but its virulence is diminished by the process of desiccation. His experiments also lead him to believe that its action is more manifest when introduced intracranially, than subcutaneously.

Dr. Audry, in the *Lyons Medical*, gives a most instructive and convenient history and compilation of the results attained by different observers and experimentalists with the idea of obtaining a definite conclusion from the chain of circumstances and facts connected with them. He especially follows the theory of its microbic origin, and deduces some opinions whose fixidity depend upon future developments.

He says that the idea of the infectiousness of tetanus arises from two orders of facts; (1.) Clinical observation on mankind and animals, and (2), to bacteriological technique. Benjamin Travers appears to have been the first to clearly formulate an affirmation as to the infectious nature of tetanus, though, long before, facts were observed which might have led to such a presumption. Ambrose Paré believed it was due to the improper dressing of the wounds, and Lister claims he has never seen it follow an operation performed under his antiseptic system of dressing wounds. Billroth, Cooner and Socin agree with Lister as to its microbic origin. Other instances are cited to show that in locations where tetanus abounded, the death rate very materially diminished upon the introduction of antisepsis.

The experiences of St. Germain, Polaillon, and Reimboult in losing all of their cases of amputations by tetanus, led Verneuil to observe that it had its origin in their using non-disinfected instruments, and veterinary experiences were collected by Verneuil and Larger to the end of substantiating this view. M. Cagnat, having castrated successively six horses with the same ecrazier, found that all of them died of tetanus; the instrument having been cleansed, there were no more deaths. M. Langevin states that in 1848, Veterinary Surgeon Huvelier lost from tetanus thirteen out of fifteen horses which had been operated upon simultaneously, and M. Bounian relates that of six bulls which he castrated simultaneously, five had tetanus. M. Thierry castrated fourteen lambs and twelve succumbed, while thirteen operated upon at the same time by another veterinary surgeon recovered. On inquiry it was found that five months before a horse had died of tetanus ten or twelve yards from the place where Thierry's newly castrated lambs, were lodged. In 1870 M. Anger saw a dog become tetanic where there was a horse suffering from the disease. Many other instances having the same import as those cited above, were related at the Surgical Congress, but these will serve my purpose to show their tenor.

While the clinicians were collecting facts, the experimentalists were also busy. In 1860 Rose failed to produce tetanus by inoculation; Arloing and Tripier were likewise unsuccessful, though they employed blood as the medium, and Nocard, Antonelli and Cocco were no more fortunate. But in 1883 an important advance was made in the solution of the problem, MM. Carl and Rattome having succeeded for the first time in producing the disease by inoculation. A man died from tetanus, which was due to an acne pustule on the neck; Carl and Rattome excised the tissues of the pustule, and, examining them in an emultion, saw cocci and bacilli, and intramuscular, intrasciatic, and intravertebral inoculation with their dilution produced opisthotonous tetanus in eleven of twelve rabbits experimented upon. Bizzozero and Burrutti obtained similar results, but failed when employing blood.

In 1884 Nicolaier discovered in vegetable soil a microbe, which when injected into the guinea pig, produced a tetaniform affection transmissible by inoculation; the muscular spasms, commencing in the inoculated limb, soon became generalized. This microbe was a long bacillus, abundantly prevalent in the pus formed around the seat of inoculation. But Nicolaier failed in his attempts to isolate it in pure cultures, though his series continued to be toxical.

Lastly, Rosenbach, employing fluids obtained from a person affected with tetanus, consequent upon frost-bite of his feet, succeeded in isolating a bacillus which he could grow in a pure state and in indefinite series, while capable of retaining its power of producing tetanus in animals inoculated with it.

It appears that in Germany it is generally accepted that Rosenbach's bacillus is the microbe of tetanus. But unanimity does not exist among the investigators. Ferrari believes the microbe to be a staphylococcus, but the great experience of Rosenbach, backed as he is by the researches of Brieger, tend to the belief that the German is correct.

Brieger worked with broth inoculated with the bacilli of Rosenbach, and succceeded in isolating the four "toxin," or ptomaines as follows:

1. Tetanin, easily decomposible by acids, but unattackable by alkalies. Injected in doses of a few milligrammes, it causes death, with tetaniform manifestations.

2. Tetanoxin, producing tremblings, paralysis and cramps.

3. An unnamed substance which produces tetanus and causes great increase in the lachrymal and salivary secretions.

4. Spasmotoxin, which kills animals with tonic and clonic convulsions.

In decomposed cultures these substances are not found.

Thus, according to Brieger, here are four vegetative ptomaines, sprouting from the bacillus of tetanus, each capable of producing that disease.

Dr. Audry makes the following conclusion of the great mass of facts which he has collected:

"If these results are incontestable—and they can only be so by people of altogether special competence—it is certain that a great advance has been made in microbio-chemistry. Nevertheless, it is not permissible to accept as quite demonstrated at present, the absolute value of Rosenbach's bacillus. The extreme difficulty with which it can be cultivated—a difficulty so great that bacteriologists of the greatest competency have failed in their attempts, and no one has been able to categorically control Rosenbach's results—may cause us to hesitate in affirming the question, although it may be possible to admit as very probable the infectious and transmissible nature of tetanus."

MODERN TREATMENT OF WOUNDS.

Translated by W. J. Turner, Ph.D.

The method of treating wounds has undergone many changes and witnessed as many improvements during the last fifteen years, ever since the doctrine of Lister has been established on a solid basis. That doctrine may be expressed in these few words, "Keep the wound perfectly clean and prevent infection." In veterinary practice it is not always possible to obtain the same results in the treatment of wounds as it is in human practice, for reasons too obvious to require explanation. We have, nevertheless, had some good results in the treatment of wounds in veterinary practice within recent years, and accomplished veterinarians are everywhere directing their efforts towards improvement of the technical details of dressing. The watchword of the new treatment of wounds is, "Antisepsis," or the prevention of infection. Experience and observation have proved that the surrounding air is saturated with decomposing ferments, bacteria, bacilli and schizomycetes. We might in fact say that a wound becomes almost instantaneously infected with decomposing ferments the moment it is produced. And if we consider that our clothing, instruments, bandages, and especially the bedding in the stables contain bacteria to some extent, it is evident that every wound, even those which have been made by operation, become more or less directly infected. The modern rational treatment of wounds demands antisepsis, requires removal of the decomposing ferments and especially their continued preclusion. Do practitioners always comply with this rational demand of modern surgery? Some veterinary surgeons say it is impossible to fulfill these conditions, and for this reason we will keep on treating wounds according to the old method. What is this old method?

The wound is either treated exposed and open, or it is, after a coating of ointment, tincture or powder has been applied to it, covered with cotton or oakum, held in position by bandages. The wound was infected when it originated; to this infection add fresh virulence through the instruments or hands of the operator and the bandages. The latter are porous; they are supposed to absorb the secretions from the wound, and in the same measure as they absorb the secretion, we have as a result decomposition and putrefaction taking place. On this account, the bandages must often be renewed, and the wound has not the rest necessary for healing. This method is still employed to a great extent in veterinary practice, although experience has taught us its futility. Of course the open treatment of wounds possesses undoubted advantages over unguents, etc., since it holds that the main point to be kept in view, is to have free drainage of the secretions, because if the secretions become stagnated in the wound, we have with free access of air, decomposition, which at once infects the wound and afterwards the entire organism. To produce free or natural drainage, we often make counterapertures, incisions and resort to drainage tubes. Wherever free drainage exists, local decomposition is prevented, and the wound must heal under these circumstances, unless some other antihygienic influence prevails. Since Lister's principle became an active element of surgery, nearly every wound is drained by means of rubber drainage tubes, by which means the wound is kept clean; unhealthy secretions are eliminated, decomposition is prevented and healing by first intention is greatly facilitated. In veterinary practice it is often impossible to employ drainage and to apply antiseptic dressing at the same time, owing to the difficulties which we experience in the attempt, and also because the cost of the bandages and other appliances in comparison with the value of the animal to be treated, puts the matter out of the question. We are enabled through the antiseptic treatment to perform certain operations without the subsequent occurrence of wound fever or swelling, and to heal the wound without the formation of pus. Septical wounds, especially such as are found on the hoofs of horses or claws of cattle, are dressed with great advantage according to the antiseptic plan of treatment, although it must be confessed, that it is very difficult at times to secure complete antisepsis. Not on the use of the antiseptic dressing material alone, is based the great success of the antiseptic treatment of wounds, but in the scientific application of the means to be employed, and in the strict adherence to Lister's principle, to keep the wound aseptic. For instance, in the operation of neurotomy, in excising a piece of the plantar nerve, the first thing to do would be to empty the blood vessels by the proper bandages, then to clip and shave the hair on the spot where the incision is to be made and wash the spot well with soap and water, and afterwards with a solution of corrosive sublimate or carbolic acid. The hands and instruments should also be well disinfected. After the excision of the piece of nerve, the wound is to be dusted with iodoform and sewed up with catgut or carbolated silk ; the seam is to be well dusted with iodoform, well covered with borated or salicylated cotton ; all should be kept in position by a disinfected bandage. If this bandage receives a coating of tar, it improves its durability and prevents to a great extent the penetration of septic substances. Covered in this manner, the wound has rest, and rest and antisepsis are the requirement of rational treatment of wounds.—*Der Thierarzt*, (*May*.)

OUTBREAK OF RABIES IN IOWA.

By Prof. M. Stalker.*

Through the kindness of Prof M. Stalker, State Veterinary Surgeon, we are permitted to lay before our readers some interesting facts relative to an outbreak of rabies among domestic animals in Lucas county, Iowa. We collate from an official report sent him by one of his deputies, Dr. J. E Johnson, of Red Oak: A strange, yellow bird-dog, having a brass collar with the name "D. M. Beard, Cleveland," was found by Mr. Macy, a farmer of Lucas county, lying in his wagon-box, near the barn, January 3, 1888. Mr. Macy went up to the dog, when he attempted to bite him, whereupon the dog was driven off. He found shortly after that one of his horses had been bitten on the nose.

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*Monthly Bulletin of Iowa State Board of Health, (March, 1888).

The same evening this dog was seen by Mr. Enslow, when he had a fight with his (Enslow's) dog. The next morning, January 4th, this "yellow" dog was found dead a short distance from Mr. Enslow's house.

This dog is supposed to have been rabid, and the original source of communicating the disease to the other animals.

As stated, Mr. Macy's horse was bitten on the nose January 3d. It was seized with rabies January 15th, and died on the 18th. Enslow killed his dog that was bitten in the fight alluded to, because he said he thought he was "going mad."

January 22d, a dog belonging to Mr. Tharpe, living in the neighborhood, bit a dog of Mr. Taylor—one of his neighbors. Taylor's dog, so bitten, was seized with rabies February 6th, and died February 9th. January 23d, this same dog of Mr. Tharpe's bit Albert James, a grandson of Mr. Tharpe's, lacerating his hand, which bled freely. The wound has healed—no signs of rabies. The same morning (January 23) Tharpe's dog followed the team to the town of Lucas, a thing he was never known to do before. On the way they passed through Mr. Robinson's pasture in which was one of his horses. On the way to Lucas the dog had several "fights" with other dogs.

The horse of Mr. Robinson's that was in the pasture when Tharpe's dog and the team drove through, January 23d, was seized with rabies February 12th, and died February 16th; and two of the dogs referred to, as having been fighting with Tharpe's dog, died with marked symptoms of rabies. Tharpe's dog did not return home, and as a dog supposed to be "mad" was killed by the marshal of Lucas that day, it is believed to have been Tharpe's. Mr. Tharpe's dog went freely among his stock and hence the date of their being inoculated is not definitely known. Though, as above stated, the first the dog was known to be diseased was January 22d or 23d—the day the boy was bitten, and the dog went to town.

The next case occurring on Mr. Tharpe's farm was among the hogs. The first one was sick February 8th, and within a week four more were taken. All died in from one to three days.

Tharpe's cattle sickened as follows: One on the 10th of February, and one on the 11th, both dying on the 12th. The third one sickened February 15th, becoming paralyzed the 16th, was killed. The fourth on the 17th and was killed the 20th, and the fifth and sixth the 21st, and were killed the 22d.

One of Mr. Tharpe's horses became sick with rabies February 10th, and died on the 13th.

To Recapitulate: The casualties, as far as reported to date, are as follows:

Died. Three horses, belonging respectively to Macy, Robinson and Tharpe; five hogs, belonging to Tharpe; six cattle, belonging to Tharpe; six dogs, the strange and one each belonging to Enslow, Tharpe, Beal, Taylor, and Williams; the boy bitten as above stated, but showing no signs of the disease.

The following symptoms were present as gleaned from Dr. Johnson's report:

Horses. Loss of appetite, disposition to hold the nose in the water, but hesitancy about swallowing; very nervous and excitable; later on a disposition to be vicious—would try to bite; twitching of the muscles of the neck, frothing at the mouth and inability to swallow, a great tendency to rub the head. The respiration was labored, salivation, emaciation, convulsions, paralysis, death. No post-mortem examination was made in any case as far as known.

The following were the symptoms observed in Mr. Tharpe's hogs: Loss of appetite; would stand with nose in water but could not swallow; great restlessness; salivation; trembling; tendency to throw up the nose and to climb up sides the of the pen, and at times would jump up off all four feet at one time; shaking the head; fighting; yawning; would squeal as though being choked; emaciation; great excitability; paralysis; death.

Cattle. Loss of appetite; could not drink, though apparently thirsty; restless; spasmodic contraction of the muscles, especially of the posterior extremities—would lick the snow; were furious and disposed to attack anyone and anything; did not chew the cud; lost flesh rapidly; milk supply diminished; salivation; disposed to bellow at almost everything; would become furious even upon the approach of a chicken; a hoarseness to their bellowing unnatural in health; would hold the head up high; eyes staring; would lie down a few minutes and then get up; pawing; paralysis; coma; death.

The *dogs* showed the following symptoms: loss of appetite; nervous; restless; excitable; disposed to attack everything in their way; salivation, quite profuse; head down; lower jaw dependent; stupor and death.

It is to be regretted that no post-mortem examinations were made, and that the dogs were not under observation long enough to have noted more particularly their symptoms. The above symptoms were not present in kind, and in the order given in all the cases cited. Dr. Johnson is fully convinced that the disease is rabies, and in this opinion Prof. Stalker concurs.

REPORTS OF CASES.

ABNORMAL RETENTION OF THE FŒTUS—MOMIFICATION.

By W. H. Gribble, D.V.S.

The subject of the present notice is " Dimples Matchless," a full blooded Jersey cow three years old. Three years ago this spring she gave birth to a fine calf, subsequently taking the male twice, but failing to come in heat afterwards. She was, of course, supposed to be in calf, but no enlargement of the abdomen followed, and no calf was dropped. The owners have several times during the season consulted me in reference to her case, and today we proceeded to examine the os uteri and uterus.

The os was found to be round and rigid, but not excessively so, and it was soon dilated. This was followed by considerable straining, and while waiting for a fresh supply of hot water, or in about five minutes, we made a second vaginal examination, to find the passage occupied by a mass projecting from the womb, which upon passing my hand around it and drawing it out, proved to be a fœtus. The enveloping membranes were closely adherent and without any contained fluid. The fœtus was dry, and in a mummified condition, but well formed and perfect.

We have also received a similar fœtus from our friend Dr. Bailey, and have deposited both of the specimens in the museum of the American Veterinary College.—[Ed.]

FISTULOUS TRACT OF THE NECK IN A SETTER—RABIFORM MANIFESTATIONS—DEATH—SINGULAR CAUSE OF THE TROUBLE.

By G. A. Lathrop, D.V.S., House Surgeon.

An English setter was admitted to the hospital with the following history: "While out hunting several months previous, he attempted to crawl through a thorn hedge, and in doing so received several lacerated wounds in the neck, from which an abcess had formed. This was opened, but notwithstanding all treatment continued to discharge. When admitted, he presented a fistulous tract on the right side of the neck, running downwards and inwards towards the anterior border of the scapula. A counter-opening was made near the points of the shoulder, and a seton inserted. This was allowed to remain for about twelve days, when the discharge becoming less, it was removed. From this period the suppuration diminished, and soon after stopped, and twenty days from his admission the wound had entirely healed.

On the day following the closing of the wound, March 23d, his disposition seemed to become entirely changed, and from being gay and affectionate, he was observed to avoid noticing every one. The next day, after taking his walking exercise and being reported as constipated, he was discovered to be in a fit, having been found standing in his kennel, with a peculiar expression in his face and frothing considerably at the mouth. This lasted but for a few minutes. In the afternoon he continued to move aimlessly about his kennel, now and then jumping up on the sides as if trying to make his escape, and his voice seemed to be altered. In the presence of these peculiar symptoms, he was placed in a large box stall and carefully watched. He would walk around in a circle, and continue doing so for hours, and then, completely exhausted and hardly strong enough to keep his feet, would be again attacked with convulsions, lasting for various periods of time. He would commence by shaking his head, and snapping at imaginary objects; then his whole body would quiver and his legs would be convulsively moved as in epilepsy. After a convulsion he would partially rise and place his head against the side of the stall, or push against the wall, and then fall over into another fit. Though some of these rabiform symptoms were present, the diagnosis of rabies could scarcely be entertained, from the fact that the disease seemed to remain at the same stage all the time, and suspecting the possibility of abdominal disturbance, of a nature at present unknown, a strong cathartic was administered, and the poor suffering animal placed under the influence of bromide of potassium. This seemed at first to relieve him, and for two days no convulsions occurred, and he seemed to notice things transpiring about him, also taking some food. On the fourth day from the first appearance of the symptoms, he was found crying and whining as if again going into convulsions. Being placed on a good bed of straw, he laid very quiet and continued so until he was given another enema. His bowels not having operated, this caused him to become very uneasy, and to defecate small particles of fœcal matter with a great deal of tenismus. Kept constantly under the influence of bromide of potassium, which insured perfect quiet, he lingered for five days, when during the night he died.

The post mortem was made the day following. Every organ of the body was found perfectly healthy. The lungs, heart, kidneys, liver and spleen were normal. The brain was slightly congested. The intestines were entirely empty, but upon opening the stomach, which was very much distended, two pieces of surgical sponge were found, each being about the size of a goose egg. One was loose in the cavity, and the other was firmly wedged into the pyloric opening, the mucous membrane being very much congested and swollen at that point. These sponges had evidently been swallowed while walking through the hospital after his neck had been dressed. The neck at the seat of the original trouble was entirely healed.

A FEW FOOT CASES.

By M. W. Tritschler, D.V.S., House Surgeon.

The following cases, although of somewhat common occurence, serve to illustrate the necessity of early surgical interference in injuries of the foot, where the tissues, soft or hard, enclosed in the horny wall, are known or supposed to be in a diseased condition. In these patients, relief from the more urgent symptoms was obtained in one to three days following the operation, complete recovery requiring four to five weeks' time.

Case No. 1 was a grey gelding, 9 years of age, 16 hands high. Admitted on the 14th of April; at this time presenting in the near hind foot a toe-crack extending from the coronet down to within an inch of the sole; lameness was excessive, pain constant and lancinating, as evinced by constant movement of the limb and refusal to bear any weight whatsoever upon the same.

The crack had been present for a week or ten days, the animal gradually becoming lamer, and when first seen a thin sanious pus was exuding from the fissure. A warm poultice was applied to soften the wall, preparatory to operating on it.

April 15.—A V-shaped portion of the wall was removed by paring, extending from the coronary band down almost to the toe, revealing the laminæ beneath it extensively diseased. These were removed and the parts dressed with carb. sol.; considerable pressure being brought to bear upon the wound to control the granulations.

April 16.—No improvment; excessive lameness continues; upon removing the dressing the diseased condition of the lamina was noticed to have spread and upon excising them the bone beneath it was found to be in a necrotic condition and a sequistrum about to be thrown off. Dressed the parts as before.

April 17.—Temperature had risen to 102$\frac{3}{5}$; entire refusal of food. The wound had suppurated freely; pus was threatening to undermine the wall and sole. More of the wall was pared down, diseased lamina removed and a piece of bone about an inch long and half an inch wide. A groove was also made at the sole around the toe to allow of the free escape of pus. Dressed as before.

April 18.—Excessive lameness continues; upon removing the dressing it was found that the wound had not suppurated as freely; the laminæ about the edges of the wound were in a doubtfully healthy condition; appetite impaired; temperature normal. Dressed as before.

April 19.—Great improvement was manifest; not so lame; bottom of wound beginning to granulate nicely. From now on improvement was steady and rapid until on the 15th of May the animal was discharged almost well.

Case No. 2 was a grey mare, 6 years old, 17 hands high. Admitted on the 21st of April. Had been lame for four or five days on his off hind leg, and upon examination found what appeared to be a very insignificant and superficial toe-crack, unaccompanied by suppuration. Lameness was excessive, in fact more than a toe-crack of that extent would be likely to cause. A V-shaped portion of the wall was removed by paring, extending from the coronet to the sole almost, and the parts dressed with carb. sol.; foot poulticed to soften it.

April 23.—The excessive soreness still continuing, it was deemed advisable to cast her and examine the parts more thoroughly. The sole was pared down and found to be undermined with suppuration and that a communication existed between it and the wound in the wall. The opening in the wall being enlarged showed that there existed an extensive necrosis of the os pedis. Dressed antiseptically.

April 24.—When the dressing was removed, it was found that the wound had suppurated freely; the bone was still exposed; dressed as before. The animal is still very lame, uneasy and refusing all food.

April 25.—No change; wound presented an unhealthy aspect; mortified portions of laminæ removed and the parts dressed as before.

April 26—The improvement in gait and general condition being so flattering, the wound was not disturbed.

April 27.—Wound presenting a healthy appearance and granulating nicely; improvement in gait well marked; continued to do well after this until the latter part of May, when she was discharged quite well.

Case No. 3 was a grey gelding, 12 years old, 16¾ hands high. Admitted to the hospital on the 24th of April, presenting a severe toe-crack on the off fore leg, suppuration undermining the wall, accompanied by an injury at the coronet, where an abscess had formed. It was thought best to remove the entire toe; was accordingly cast and upon removing the same found the laminæ extensively diseased and that the toe-crack was complicated by kerophylocele, this by pressure upon the os pedis inducing an atrophy of the bone, as shown by a groove running its entire length and about an inch in width. The patient had been subject to toe-crack for a long time, but had always recovered by simple treatment. The diseased parts were excised and the wound dressed with carb. sol., pressure being brought to bear on it.

April 25.—Well marked improvement in gait; the wound had assumed a healthy aspect and continued to do well thereafter. The animal was discharged the latter part of May, to be dressed once or twice a week until the new wall had been grown.

EXTRACTS FROM FOREIGN JOURNALS.

ABNORMAL RETENTION OF FŒTUS—MOMIFICATION.

By E. Lavignac.

The query whether this condition interferes with subsequent gestation seems to be settled affirmatively by the following case: A cow four years of age, was served in July, 1885. A year then elapsed, during which she seemed to be in a condition of gestation, so far at least as that the rutting periods had not recurred. The supposed time for her delivery, however, arrived and passed off, without increase in the dimension of the abdomen, and the conclusion was adopted that the animal was not pregnant. Later, or about fourteen months from her last previous service by the bull, she was again served and once more a month later. On the evening of that day, she became sick and refused her food, and had some colicky pains. Visited by Mr. Lavignac, she was carefully examined, and no cause could be found to explain the trouble. But late in the night expulsive efforts occurred, and she was delivered of a small ovoid mass, presenting a fleshy structure partly putrefied. It was formed by the placental membranes, with a completely mummified three months fœtus enclosed. The abortion was followed by no complications, and the cow recovered in a few days.—*Revue Veterinaire.*

URETHROTOMY IN A STEER.

By M. Bouchet.

A large ox, eight years old, was taken with violent colic in the middle of the night. Laying down and getting up, kicking violently, and gazing at his flanks, he was evidently enduring great suffering. He was somewhat tympanic ; had not ruminated since the morning previous, was covered with perspiration and had not micturated. Taken out of his stall, he was with difficulty kept standing at rest; his tail was frequently erected, and the urethra was seen violently bouncing and contracting, but without the escape of a single drop of urine. By rectal examination the bladder was found enormously distended. Pressure on the urethral tract, in the scrotal region, gave rise to excessive pain, which caused him to drop down on his back.

Although unprepared for a case of that nature, the author performed the operation of urethrotomy, as best he could, in order to relieve the excessive distention of the bladder, and to obviate immediate danger of the rupture of that organ.

Two days later a more minute exploration revealed at the second curve of the S of the penis, a small immobile nodosity, pressure upon which caused great pain. Finding it impossible to erect the penis sufficiently for the performance of scrotal urethrotomy, an incision was made over the seat of the hard body felt in the urethra, and two calculi extracted which had been well imbedded in the surrounding tissues and entirely closed the canal. The urine then had a free channel of escape, through both the first and the second incisions, and the animal made a rapid recovery.—*Revue Veterinaire.*

RABIFORM SYMPTOMS IN A DOG, FOLLOWING THE PERFORATION OF THE DUODENUM BY TWO TAPE-WORMS.

By M. Cadeac.

A terrier dog was killed and his cadaver examined in search of the characteristic lesions of rabies, which from the symptoms he had presented, had been suspected during life. The history showed that for three days he had been dull and uneasy, his mouth full of saliva, his looks threatening, and that while at times he had seemed furious, he had at others been only dull and morose. At intervals and by occasional accessions he had exhibited a desire to bite; had gnawed doors and other foreign bodies, and at last, had run away when his master attempted to approach him.

In opening the abdomen, two tape-worms were discovered, one floating in the peritoneum, the other engaged in a perforation through the intestines, partly in the peritoneal cavity and partly retained in the intestines. The intestinal fistula through which they had passed was situated at a short distance from the stomach. The fistula had all the characters of being of some standing and certainly was not a post mortem lesion. The entire organism otherwise was in a perfectly healthy condition.

To obviate any possible objections to the diagnosis established by the post mortem, the rachidian bulb was triturated in distilled water, and the liquid filtered and an injection of it made on a dog and a rabbit; on the first, in the frontal region, on the second, in the anterior chamber of the eye. The dog died two days later of another disease, while the rabbit recovered from the operation and was well two months after.—*Ibid.*

CONTRIBUTION TO THE STUDY OF MELANOSIS.

By T. Mauri.

After reviewing the theory of the usual presence in gray and white animals, and of the exceptional manifestation of the disease in horses of different colors, bay and black, and referring to a few cases where abnormalities of that nature have been recorded, the author describes the case of a chestnut bay mare, with white hairs on the body, aged six years, which was brought under his observation. The animal had first at the inferior face of the base of the tail, on the left side, a tumor of the size of a goose egg, bosselated, hard, painless, well defined, and of a well marked black color. Evidently it was a melanoma. The animal was operated on and recovered. An examination of the tumor by section demonstrated the correctness of the diagnosis.

About a month later the animal was returned to Mr. Mauri, the growth having reappeared. It was larger and was surrounded by numerous smaller ones of the same nature and aspect. The malignant nature of the disease was also more evident. Another operation was performed, with a less favorable prognosis and yet the animal was discharged two weeks later, cured. A few weeks later, however, the growth had returned, with numerous secondary tumors surrounding it, and now extending around the margin of the anus. From this time the animal grew worse and difficulties manifested themselves in the functions of the hind quarters; weakness of the hind legs, first betrayed by difficult locomotion, was followed by inability to rise from the ground unaided, and then came entire paraplegia, soon succeeded by constitutional disturbances ending a little later, in death. At the post-mortem, besides the lesions of the tail, a large tumor was found on the left side of the anus, and united with melanotic deposits situated under the sacrum. The liver, the spleen and the lungs were filled with growths of various sizes and the endocardium of the left ventricle of the heart was covered with melanotic spots, while a tumor of the size of a nut was also found in the rachidian canal, on a level with the third lumbar vertebræ, and pressing on the spinal cord.

This case, according to the author, is interesting because of its being unique in the works of veterinary literature, and on account of the light it throws upon the ultimate nature of melanosis. —*Ibid.*

TREATMENT OF WARTS, MELANOTIC TUMORS, FIBROMA, SARCOMA AND OTHER GROWTHS, WITH ARSENIOUS ACID.

By M. Lignon.

For the last eight years the author has adhered to this treatment for the above named growths, and he claims that his efforts have been rewarded with uniform success. This treatment commends itself in every case in which the growths are developed on the skin or in the sub-cutaneous connective tissue, when not in proximity with important organs likely to involve complications which may bring on fatal results or blemishes of the animal affected.

Indications.—When a heteromorphous tumor of whatever nature develops itself, whether on the neck, the shoulder, the chest, in the axilla, on the abdominal walls, on the sheath, the fore arm or the thighs, the operation is indicated, and a uniform result will follow. In carcinoma in bitches it has also given excellent results.

Contra Indications.—It must not be used when the tumors are around the eye, the anus, or the vulva.

Modus operandi.—Incise the tumor in its length and divide it in two halves. Sponge the blood well and cover the sections of the growths with powdered arsenious acid, in quantity proportional to its size. The phenomena following, in twenty-four hours after, are local tumefactions, more or less œdema of the part, and little or no fever. But three days after, the eschar is defined and sloughs by degrees, and is followed by rapid cicatrization.—*Ibid.*

LARGE EPIPLOIC TUMOR IN A BITCH—ANTISEPTIC LAPAROTOMY —RECOVERY.

By Prof. Degive.

Although the fact is generally understood that the abdomen of the dog may be exposed with but little comparative danger, and that surgical operations are frequently performed in that region without bad results, there is an interest attending the present case—and it is with reference to this that it is published—arising from the illustration it affords of the value of the antiseptic method in operative surgery, and the consequent duty of the veterinarian to put it to the test and to secure all the advantages it may involve.

A bitch supposed to be pregnant had exceeded her time of delivery without having her litter, but at the same time exhibiting an unusually large abdomen. The ventral walls were tense, but the enlargement was more marked in the anterior than in the hypochondiac regions. A round mass on the right flank was distinctly felt, but there was no detectable fluctuation. The animal was comparatively in a satisfactory condition, and the operation of laparotomy was decided upon, as much to form a diagnosis as to relieve the patient, which was supposed to have neoplastic tumors of some kind.

Careful and strictly antiseptic laparotomy was performed, and the spleen, with a large bloody tumor of the great omentum, were removed. The wounds were closed with antiseptic ligatures, and antiseptic dressing carefully applied, and in less than two weeks the cicatrization was perfect and the animal reported as sound and well as ever.—*Annales de Belgique*

DOUBLE INGUINAL HERNIA, ONE CHRONIC, THE OTHER ACUTE, IN A GELDING.

By F. Hendrickx.

The subject of this report was a gelding, three years old which presented a tumor in the left inguinal region, which had appeared shortly after the operation of castration, and had gradually increased in size. Its characters as shown in the inguinal region were well marked. It was of a somewhat regularly round form, soft and elastic, and comparatively readily reducible. The correctness of the diagnosis was verified by rectal examination' which discovered the tumor through the inguinal ring, as a large soft, elongated mass, continuous with the intestines. The hernia was formed by a portion of the cord, and the omentum, adherent to the bottom of the sac, together with a portion of the small intestines. The patient was prepared for operation by dieting, with the administration of a drench consisting of 1½ ounce of a mixture of 200 grammes, (or about 6 ounces) of tincture of arnica with 9 grammes of phenic acid crystals, and the operation proceeded with by a careful dissection of the sac by a free incision, and the laceration with the fingers of the adhesions of the omentum, which, upon being liberated, returned into the abdomen. This was followed by the application of a clamp, close to the ring, as in the operation of castration with covered testicle. Nothing special occurred during the operation, except that the animal struggled very violently.

On the second day following the operation the animal was taken with colics and hemorrhage, together with an alarming series of symptoms, which suggested the possibility of intestinal pinching between the jaws of the clamp, or an extra traction in the inguinal region, but careful examination failed to show any thing wrong in that direction. General treatment, according to the indications present, was pursued, but notwithstanding the best care, the animal died within a few hours. At the post mortem every thing was found in proper condition on the left side, but on the right there appeared a soft, piriform irreducible tumor, formed by the vaginal sac and containing a portion of strangulated small intestine, evidently a lesion which had taken place during the struggles of the animal while under operation, which at the time was entirely overlooked.—*Ibid.*

EXPERIMENTAL PATHOLOGY.

BACTERIOLOGICAL RESEARCHES IN TETANUS.

By Lampiasi (of Trapani).

The author reports that he made cultures of the bacillus of tetanus in using the material obtained from a man that died of spontaneous lockjaw, and from two mules, one of which died, while the other recovered in twenty-seven hours.

These cultures showed that the microbe in its full development has the form of a bacillus, straight, very seldom curved, or divided into small cylindrical fragments. At the period of sporification it is at times fusiform and granular in aspect. The spore is a large elliptical cell, with two short filiform prolongations, visible only in the dried preparations.

Upon agar and gelatine the microbe gives whitish colonies, rounded, resembling a drop of wax, and becoming yellow after two or three months.

Forty-five guinea-pigs, seventeen rabbits, two lambs and one sheep were inoculated. Of these, twenty-seven died from tetanus, twelve had the same disease and recovered, and ten died from acute infection, without tetanic manifestations.

To resume: 1st.—The micro-organism of lockjaw is a specific bacillus, identical in its form either in man or in animals.

2d.—This bacillus is very easily cultivated from the blood of affected subjects, either accidentally or artificially inoculated.

3d.—Spontaneous tetanus is produced by the same organism as that of experimental lockjaw.

4th.—Traumatic tetanus is, in all probability, produced by the same micro-organism.—*Surg. Cong. of Naples, C. R.*

UPON THE TRANSMISSION OF INFECTIOUS DISEASES BY MIASMATIC CONTAGION.

By Messrs. Cadeac and Malet.

Not finding in the expired air a cause of contagion by dissemination of the germ, the authors have endeavored to discover whether the contagia carried in the atmosphere by putrid emanations, or if infected waters, swept by the air, could distribute a portion of the micro-organisms they contain.

To solve these questions, they exposed a series of animals, in a quiet and undisturbed media, to the inhalation from cadaveric detritus from animals which had died from various virulent diseases, as small-pox, anthrax, tuberculosis, glanders and septicemia. None of these diseases were transmitted by the cadaveric emanations, even when the normal evaporation was slightly increased by heat, or when the detritus were exposed to strong drafts of air.

As supplementary evidence, they inoculated the water obtained in condensing the vapors of water contained in the products of these putrid emanations, but still obtained only negative results.

The experiments to determine whether the germs carried away by water could be made free in the atmosphere by the influence of the wind which swept over its surface, remained also negative. So long as the water was not entirely evaporated the germs remained in the fluid.—*Journ. des Sci. Med.*

ETIOLOGY OF GLANDERS.

By Mr. Loeffler.

He has found that several animals may easily be inoculated, the guinea-pig and the field-mouse especially. Three or four days after the sub-cutaneous inoculation, an infiltration of the teguments, with irritation of the lymphatic and corresponding glands, takes place. The viscera are also rapidly involved, and multiple lesions are found in many of the organs, as the spleen, the liver and the lungs.

The coloration of the bacillus is obtained with the solution of Loeffler (1 cc. of alcoholic solution of the blue of methyline, and

3 cc. of a solution of caustic potash to the ten thousand), in which the sections are placed for several minutes, being afterwards washed in a solution of acetic acid (100.00 or better), in a liquid made with 10 cc. of distilled water, 2 drops of sulphurous acid, and 1 of oxalic acid at five per cent.

It is only in very acute cases that Loeffler has observed the presence of the bacillus in the blood.

The bacillus of glanders possesses a great power of resistance; after three months of drying, it may again actively develop; but there does not seem to be a formation of spores, as various antiseptics are known to destroy the virulence of the bacillus.

The channel for the entrance of the disease always seems to be a solution of continuity of the teguments. Until the present time, there seems to be no sufficient reasons for expecting infection through the intestinal tract. It is possible, however, that inoculation may take place through the respiratory organs, the lungs sometimes, though rarely, appearing to be the only organ found diseased.

The fœtus can be contaminated by the virus of the mother.—*Ibid.*

EXPERIMENTAL STUDY IN THE TRANSMISSION OF GLANDERS BY MEDIAN CONTAGION OR BY INFECTION.

By Messrs. CADEAC aud MALET.

The extent to which the respiratory organs are implicated in the transmission of glanders is the question which the authors are endeavoring to answer. Believing that the atmosphere is in various ways susceptible of contamination, their study has been directed to the discovery of the modes among these by which it can be made the medium of communicating glanders to a healthy animal.

Experimenting with the donkey, which is held to be the best animal for the purpose, they are brought to the conclusion, *First*, that this animal may inhale the breath expired by a glandered patient with impunity at a distance of one meter. *Second*, donkeys affected with catarrhal inflammation of the air passages, brought on by the inhalation of the vapors of bromine gas, and placed in the same conditions, have remained free from glanders, although they were exposed to glanderous inhalations several hours a day for more than a week. *Third*, the water obtained by condensing the vapor expired from the lungs of glanderous solipeds is powerless for the transmission of the disease. The conclusion is that the expired air is not virulent.—*Ibid.*

SOCIETY MEETINGS.

OHIO STATE VETERINARY MEDICAL ASSOCIATION.

The Ohio State Veterinary Medical Association will hold its semi-annual meeting at Cincinnati, July 26th, 1888.

The morning session will begin at 10.30, and the place of meeting will be at 383 and 385 Walnut street, in the Cincinnati Music Verein Hall.

Interesting papers will be read and discussed and those interested are cordially invited to attend. G. W. BUTLER, *Corresponding Secretary.*

QUARTERLY MEETING OF THE KANSAS STATE VETERINARY MEDICAL ASSOCIATION.

The regular quarterly meetlng of the Kansas State Veterinary Medical Association was held in the Windsor Hotel parlor. There was a fairly good attendance.

The afternoon session was principally devoted to a discussion of needed legislation to protect the stock owners of Kansas against the practice of veterinary charlatans.

It was decided to draft a bill having this object in view, to be presented to the legislature at its next session, and in order to have a full expression as to what should be embodied in such bill, it was decided to urge upon all members of the Association the necessity for their presence at the next quarterly meeting, to be held in this city during fair week in September next.

The meeting will be open to stock owners and others interested in this subject, and a cordial invitation is extended to all such to be present.

At the evening meeting able and interesting papers were read as follows:

"The Therapeutics of Catarrhal Fever," by Dr. Epperson, of Ottawa.

"The Clinical Therapeutics of Catarrh," by Dr. E. R. Allen, of Kansas City, Cattle Inspector for Kansas at the Kansas City stock yards.

"Parturient Apoplexy," by Dr. Epperson.

This latter paper, as its title indicates, treats of a disease that follows calving, and is therefore of wide interest. It will be given to the press at an early day.

There was a general discussion of the papers read, and various cases occurring in the practice of the members were presented and discussed.

The meeting was quite interesting and profitable to those present.

Teachers during vacation, farmers' sons when work is slack on the farm, and any others not fully and profitably employed, can learn something to their advantage by applying to B. F. Johnson & Co., 1009 Main St., Richmond, Va.

NEWS AND SUNDRIES.

GLANDERS IN ILLINOIS.—From Tuscola it is reported that glanders has broken out, that the State Veterinarian killed several diseased animals, and that a man named T. Butler, having inoculated himself in taking care of them, has contracted the disease.

There is considerable alarm in the neighborhood of Decatur, on account of the prevalence of glanders. Quite a number of horses have been killed and others quarantined. In Dalton City the authorities have ordered that all the hitching posts be taken up and burned.

A SIX-LEGGED COLT.—We have received the following from Findlay, Ohio. "A strange freak of nature in the shape of a six-legged colt is the property of Martin Ensling, of Portage township, this county. The animal was foaled Monday night, and bids fair to become a dime-museum attraction. The hind legs of the animal are natural in form and size. The right fore leg is double from the knee down, having two perfect hoofs. On the left side twe legs start out from the shoulder. They are perfect in shape, but are only about half as long as the other limbs. As the colt is otherwise sound, and can walk all right, there appears no reason why it should not live."

THE LOCO WEED IN ARIZONA.—The following is taken from an Arizona paper: "Loco weed is reported to be playing havoc with horses in several sections of northern Arizona at present, and many of the oldest stockmen unite in saying that it is unusually thick. Losses of horses are reported by many, and the scientific experts of the Agricultural Department at Washington, who have reported that the weed in itself does not contain any element injurious to live stock, can obtain ocular proof that it does by paying us a visit. Any series of experiments—no matter how expensive—that will disclose the true nature of the loco weed and provide some remedy for its ravages, will be more than repaid during the first year by the saving resulting from a knowledge of what will effect a cure once that an animal has eaten the weed."

ANIMAL CENSUS.—The estimated number of domestic animals now on farm and ranch in the United States are thus classified: Horses, 13,172,936; mules, 2,191,727; milk cows, 14,856,414; oxen and other cattle, 34,378,363; sheep, 43,544,755, and swine, 44,346,525. The estimated average values are: Horses, $71.82; mules, $79.78; milk cows, $24.65; oxen and other cattle, $17.79; sheep, $2.05, and swine, $4.98. The live stock interests of the country, including horses and other animals in cities, represent not far from $3,000,000,000. Those who have been in the habit of attaching but little importance to veterinary education should ponder these figures. The nation cannot continue prosperous when interests so vast and susceptible to disease are consigned to the keeping of ignorant pretenders. Thorough veterinary education is a question in which our people should feel the deepest concern.—*Turf, Field and Farm.*

HYDROPHOBIA IN WEST VIRGINIA.—In Jackson county an epidemic of hydrophobia among cattle of all kinds has broken out, and the farmers have lost thousands of dollars' worth of fine stock. A dog owned by a man named Huffman went mad, and before he was killed attacked a number of other dogs, cattle, sheep, swine and poultry on several farms. These animals nearly all went mad, and have since died. The dog went to the farm of a man named Wright and attacked a valuable stallion, which has died. It ran into the open door of a school-house and created an uproar in the school, snapping and biting at several of the children. One little girl is seriously hurt. There is scarcely a farm in the upper part of the county upon which some animal has not been bitten. The dog, when it reached home, attacked its master, who felled it to the ground and chained it till it died. More than fifty hogs have been killed, and numbers are yet about the country. In Ravenswood, in the same county, the mayor has ordered every dog muzzled, and much excitement exists. Deaths among the cattle are increasing. Cattle that have died from hydrophobia are lying in the fields, and persons are afraid to eat any meat from that section.—*National Live Stock Journal.*

Bovine Tuberculosis.—Dr. Brush of Mount Vernon discussed at the Albany meeting the subject of bovine tuberculosis. Of all domesticated animals, the bovines are the most subject to tuberculosis. Five per cent of the cattle in England are affected with tuberculosis, and it is said that twenty per cent of the cattle in some of the thoroughbred Jersey herds in the Northern States are similarly affected. He believed that more human beings were not infected, because the normal temperature of the human race was so much lower than that of the bovine,—98.5°F. in the one, and 101° to 103°F. in the other; this latter temperature being necesaary for the growth of the germ of the disease. The cultivation of tuberculosis in animals confirms this view, as resistance to the disease decreased as the normal temperature of the animal increased. Thus, in the dog, resistance was good, while in the common fowl it was *nil*. Dr. Brush thought that the Federal Government would do better to spend its money in the investigation and suppression of this disease, than to appropriate five hundred thousand dollars to stamp out pleuro-pneumonia, which did not affect the human race. He believed, that, if bovine tuberculosis were eradicated, it would soon become eliminated from the human race, and he thought that physicians should strive to procure laws which would accomplish this.—*Science.*

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AUGUST, 1888.

EDITORIAL.

THE REGULATION BY LAW OF THE PRACTICE OF VETERINARY MEDICINE IN THE STATE OF NEW YORK.—The need for it gradually felt for years—attempts and failures following each session of the Legislature—the cause—divisions in the ranks of the veterinarians—union is necessary for success—the two inimical societies at last act together—the result is the passage of a bill by the Legislature of 1886—the telegram sent to Dr. Pendry—the work of registration begins—the discovery—disappointment amongst almost all—the "liberals" do not object—the game of the postal card—terrible results of the mutilation of the bill—Hon. J. B. Shea, of the Assembly, comes to the rescue—his efforts in behalf of the profession—the amendment to the law—section 2 is no longer as it was—this time quackery is doomed—but veterinarians must watch. EFFECTS OF LIGHTNING ON HORSES.—The subject rather lightly treated in veterinary works—few cases on record, except the fatal ones—the case of Pancoast—his recovery slow but sure. GOVERNMENTAL AID TO FRENCH VETERINARY SCHOOLS.—The difference between the doings of European and American governments—shall we ever see similar action in the United States?

THE REGULATION BY LAW OF THE PRACTICE OF VETERINARY MEDICINE IN THE STATE OF NEW YORK.—The members of the veterinary profession in this State had been for years considering the low status maintained and the slow progress achieved by veterinary science in the estimation of the public, until at length they felt that the time had come to take a new departure, and make a vigorous effort to obtain the legal protection and government recognition without which the full establishment and further advance of its claims seemed impracticable. Movements were then initiated and steps taken looking to an appeal to the Legislature for the passage of laws for the regulation of veterinary practice in the State, by defining the qualifications and protecting the rights and interests of properly authenticated practitioners, and the discouragement or suppression of quackery and pretension.

These early attempts met only with discouragement and embarrassment. The annual presentation of their appeal was met by a yearly denial, and that some potent opposing forces were in operation became only too evident. Until these were discovered and neutralized, further effort seemed to be wasted labor.

Concerning one potent element of failure there could be no uncertainty. An obstructive discord existed among those who should have wrought as one man for a common good. The veterinarians of New York and Brooklyn, instead of forming a single community, united and co-operative, were divided into two bodies, having very similar names and entertaining very similar projects and intentions, but, without any good and tangible reason, occupying positions quite antagonistic and inimical towards each other. To obtain any such legislation as should be agreeable to both parties under such conditions was beyond all reasonable expectation. But at length wisdom dawned on their minds, and union being strength, a united movement was decided upon as the indispensable conditions of success. Then, after a series of palavers, the pros and cons were duly adjusted, and preliminaries of peace were signed. The younger association, as was proper, made the needful concessions to the elder, and with many protestations of friendship and of fraternal affection, the point of mutual consent was reached, and it was decided that another, and now a co-operative, appeal should be made to the law-making body. This was not unsuccessful, and accordingly the Legislature of 1886 passed the bill for which application had been made.

So in May of that year, a telegram was received by Dr. W. Pendry, announcing that "the veterinary bill has just been signed, and is now law." But though a feeling of satisfaction prevailed among many veterinarians, there were others who seem to have been affected by a feeling of apprehension and foreboding, as if influenced by the shadow of some impending trouble, vague but actual; and when the work of registration was entered upon the revelation came. A discovery was made, and of a most disappointing character—the text of the Act had been garbled, mutilated, emasculated, and the entire essence of the law eliminated. It was a sad discovery.

The bill had been mutilated. Who was the culprit? When was the crime perpetrated? All the interrogative adverbs in the dictionary were employed, but a negative answer followed each. Instead of regulating the practice of veterinary medicine in the State, the law now thoroughly *un*regulated it; instead of protecting the qualified practitioner by proper conditions and restrictions against the charlatan and pretender, it practically protected the ignorant pretender against the trained scientist, and threw the field open to whosoever might feel a desire to occupy it.

If enthusiastic veterinarians, with the true interests of the science at heart, regretted the position, with its apparent reconciliations of discords and ostensible legal sanctions of the right and the true, there was still a small body of men in the profession who failed to unite in the impressions and feelings of the rest. These were the "liberal" ones, who were not fond of placing rigid restraints on others, nor of wearing them themselves. They would concede that in this matter some few requirements should be respected, and the law not too palpably violated. A few easy rules would be well enough, a few easy conditions formulated, such as would not be irksome, and could be justified without going far out of one's way. Thus if some poor fellow was known to practice without being registered,—a *postal card* notice would be sent to him; a *postal card* to make his equivocal position only the more public. He ought to take some pains to comply with the requirements of the law at least, by acknowledging the receipt of the postal card, and then it would be easy to "fix up" the non-registration matters. Freedom of registration; a grinding mill of certified credentials; easy going moderation—"long life to quackery!" which, it had been thought, had received a death blow. Thoughts like these are naturally suggested by a contemplation of the result of the law, as enacted in 1886, or rather, as signed by the Governor. The mutilation had done its work.

But this state of things could not become permanent, and the Honorable John B. Shea is entitled to the acknowledgments of the veterinarian fraternity for his efficient services in readjusting the disorder into which the matter had fallen. To this gentleman, and to the last Assembly in Albany, of which he was an honored member, the veterinary profession of the whole country owes much for accomplishing the perfecting of the amendment to the essentially worthless legislation of 1886.

Mr. Shea has by this step fully demonstrated his appreciation of the value of the services rendered by the veterinary profession to the country; of the requirements needed by its qualified members, and of the services which educated veterinarians are capable of rendering to the State, and his name must hereafter be closely associated with the elevation of the veterinary profession in the Empire State.

We print on another page the second section of the law of 1886, together with the amendment, as published. The duties which these enactments impose upon the profession of the State at large, and upon all veterinarians now registered, will be readily appreciated, and will also, we hope, be well remembered and promptly performed.

We urge our brethren to watch carefully lest the good we seem to have obtained be snatched from our hands. It is a matter of too much moment to be forgotten or set aside for smaller interests. It makes the qualified veterinarian the custodian of his own interests and honor. Let him not be unfaithful to himself.

The following presents Section 2 of the Law of 1886, and the amendment passed in 1888:

[Copy of Sec. 2 of the Law of 1886, regulating the practice of veterinary medicine.]

Sec. 2. No person shall be entitled to register as such practitioner unless he be a graduate of a legally chartered or incorporated college or university or shall hold a certificate of qualification from a legally incorporated veterinary society, except as provided for in Section 3 of this Act.

The amendment and the good law:

CHAPTER 431.

AN ACT TO AMEND CHAPTER THREE HUNDRED AND THIRTEEN OF THE LAWS OF EIGHTEEN HUNDRED AND EIGHTY-SIX, ENTITLED "AN ACT TO REGULATE THE

PRACTICE OF VETERINARY MEDICINE AND SURGERY IN THE STATE OF NEW YORK."

Approved by the Governor, May 27, 1888. Passed, three-fifths being present.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

SECTION 1. Section two of chapter three hundred and thirteen of the laws of eighteen hundred and eighty-six, entitled "An Act to regulate the practice of veterinary medicine and surgery in the State of New York," is hereby amended so as to read as follows:

§ 2. No person shall be entitled to register as such practitioner unless he be a graduate of a legally chartered or incorporated veterinary college or university, or shall hold a certificate of qualification issued previous to the passage of this Act, from a legally incorporated veterinary society, except as provided for in Section three of this Act.

STATE OF NEW YORK, }
Office of the Secretary of State, } *ss.:*

I have compared the preceding with the original law on file in this office, and do hereby certify that the same is a correct transcript therefrom and of the whole of said original law.

FREDERICK COOK.
Secretary of State.

EFFECTS OF LIGHTNING ON HORSES.—The meagreness of our recorded information on the subject of the non-fatal effects of lightning upon animals has been a source of not a little regret among veterinarians, and new and reliable reports of recent cases will possess all the greater interest, as they tend to remedy this long felt imperfection.

Records are not lacking of the deadly effects of the lightning stroke, and there are sufficiently numerous reports of the simultaneous and instant destruction of large numbers of cattle and of sheep. But our search for well-conducted observations of cases in which the traumatic effect of the electric shock has fallen short of the destruction of life, has been in only a few instances rewarded with success. Whether this is to be accounted for by the fact—if it be such—that in animals sudden death is the usual effect of a stroke of lightning, we are not in a position accurately to determine, though perhaps the circumstance of the greater exposure of animals in consequence of their usual unprotected condition out of doors, in the field or the road, will go far towards suggesting the truth of the matter. But, again, why should not the simpler and milder class of manifestations of injury by lightning, so often observed in the human sufferer, be witnessed in animals as well?

The case described in the present number of the REVIEW must, for a variety of reasons, prove to be of unusual interest to the professional reader, since, besides the fact of the great money value and "professional" renown, in his own sphere, of the "individual" patient whose case is involved, it also describes a case of injuries incurred while enjoying indoor shelter, and thus affords us an opportunity of presenting the student with such a detail of symptoms and manifestations as greatly to facilitate a comparison between the phenomena occurring under similar conditions in the human and the animal subjects respectively.

GOVERNMENTAL AID TO FRENCH VETERINARY SCHOOLS.—From the budget of the Minister of Agriculture we learn that the support given by France in the direction of veterinary education per annum is as follows: For the staff of the veterinary schools, 432,800 francs ($86,560); material for these schools, 566,000 francs ($113,200); making a total of nearly $200,000. Add to this 157,800 francs ($31,560) for the suppression of cattle diseases, and 460,000 francs ($92,000) as indemnity for the slaughter of diseased or exposed animals, and we have an aggregate of about $323,560 as the entire cost to the Republic of the regulation of veterinary matters.

Whether all this expenditure is wisely made will be widely questioned. The policy of government subsidies is popular only in this country amongst those who profit by the subsidies, and he will be a very old man who lives long enough in our Republic to see Congress voting money to pay the expenses of individual citizens in acquiring an education which is to fit them to obtain a livelihood in any civic business or profession, whether as teacher or learner.

We would not intimate that the veterinary profession is any too liberally treated and respectfully regarded by our governing powers, State or National, but we are not prepared to ask for payment from the public treasury of the salaries of our college professors or for the equine cadavers used up in anatomical demonstrations.

But they think differently in France, where the priest in the church and the singer and dancer in the opera, alike with the staff in the college, look for their salaries to the State exchequer box.

ORIGINAL ARTICLES.

RECENT WORK IN VETERINARY BACTERIOLOGY AND PATHOLOGY.

By Wm. T. Gottheil.

Perhaps the most important recent work in the domain of veterinary pathology is that of Prof. Th. Kitt on the mykofibromata of the horse and its relation to the micrococcus ascoformaus. A condensed account of the results of his researches may be of interest.

The malady is not uncommon in the horse, and is seen also in the sheep and goat. The tumors vary much in size and number, and whilst in the first named animal the inflammation always causes the formation of a small-celled new growth, a true granuloma, in the others the process usually goes on to acute inflammation and abcess formation.

Under the name of mykodesemoid (Johne), the affection is now well recognized by veterinarians.

Bollinger first demonstrated the specific organism in 1870, finding them in nodules in the lungs of a horse affected with the disease. He considered them, however, to be fungi, and from the manner of their aggregation designated them zooglea pulmonis equi.

Later, Professor Johne, of Dresden, during his investigation of chronic spermatic funiculitis in the horse, noticed that the tumors (the so-called champignons) which sometimes appear after castration, were evidently of infectious origin. They are met with somewhat frequently under the aspect of a chronic funiculitis, and are characterized by the appearance of fibromatous masses, which finally soften and become purulent or necrotic. In these cases he found very large fibrous new growths, the contents of which were greyish-red and soft, and in places purulent.

In all of them he found a fungus exactly similar to actinomyces bovis; in the others the fungus was slightly altered in appearance by what he regarded as a degenerative process. He therefore designated the malady funiculitis actinomycotia.

In another later case of Johne's there was a fibrous growth, the size of a man's head, involving both cords. Here he found not actinomyces, but a micrococcus in encapsulated, zooglea-like groups, similar in many respects to the ascococcus Bilrothi. Still later he has published four more cases of mycotic funiculitis.

Johne also found a fibroid-like tumor, the size of a man's head, upon the heart of a 14-year old horse. This was a true mykodesmoid, and in it Johne found abundant colonies of a micrococcus similar to the one obtained from the funicular tumors.

Up to 1886 Johne has demonstrated the micro-organism in ten further cases of funicular tumor, and has finally designated it as "micrococcus ascoformans" (capsule-forming micrococcus).

During the years from 1881 to 1885 Rabe had independently found the same organism in a number of cases of mykodesmoid, had made pure cultures, and had produced similar tnmors by inoculation. He regarded a traumatism as a necessary condition for invasion by the parasite, and proved its occurrence in all his cases. He proved a perfectly constant and typical form of growth in various culture media. Inoculations killed guinea-pigs by septicæmia, caused an inflammatory œdema in sheep and goats, ending in localized necrosis of the skin or more extensive necrosis of that organ and death of the animal. In horses the inoculation of a pure culture caused at first an inflammatory œdema, which disappeared in eight to ten days. But four to six weeks later there appeared at the spot a slowly growing fibrous tumor, and this tumor always contained the pathogenic micrococcus in large quantities. Vaccination in this way gave no immunity against subsequent growths.

Although the organism he found was exactly similar to that of Johne, he unfortunately called it micrococcus botryogenes.

The occurrence of mycotic granulation tumors containing the micrococcus ascoformaus have since then been noted by a number of observers—Bang, C. O. Jensen, Lindquist, Della Cace, Vigezzi (tumor weighed 60 kilos.), and others.

The presence of the micro-organism in question has been proven by Kitt in a case of funiculitis in the horse.

For further description of the micro-parasite, the reader is referred to Kitt's article in the "Centralblatt für Bacteriologie u. Parasitenkunde," Vol. III., Nos. 6, 7 and 8.

Nocard and Mollereau have lately reported a chronic contagious mammitis occurring in milch cows, differing both pathologically and etiologically from the well-known inflammatory affection of the mammæ. The milk diminishes in quantity, becomes sour, slimy, and finally stinking, and the animal has to be killed. In the milk itself are found long chains of streptococci.

Nocard and Mollereau made pure cultures of the organism, and inoculated them upon cows and goats, producing the same disease, thus demonstrating absolutely the etiology of the malady. They could not find that the use of the milk had any hurtful influence upon young dogs or rabbits, nor could they inoculate the streptococcus upon any other animal than the cow.

The malady is undoubtedly transmitted from one animal to the other by the hand of the milker.

Washing all the parts with 3 per cent. carbolic acid solution is recommended for prophylaxis. For treatment they employ the injection of a 4 per cent. boracic acid solution into the milk channel of the affected gland.

Renewed interest has lately been awakened in regard to the causation of carcinoma and sarcoma. As is well known, the only theory that in any way attempted to explain their occurrence was extremely unsatisfactory. Cohnheim's theory, briefly stated, was that the cancer cells are simply embryonal connective tissue or epithelial cells, left over, as it were, from the original blastodermic layers, and possessed of all the qualities of rapid atypical growth which characterize cancer cells as well as embryonal cells. Why such cells should remain quiescent for half a century, and suddenly spring into vigorous life—that, as well as many other points, the theory left in the dark.

The feeling has of late years been gaining ground that the malignant new growths must be of parasitic origin; that no other theory will explain their occurrence. A number of investigators—Ballance and Shattuck, in England; Scheurlen and Schill, in Germany; Freire, in Brazil; and Rappin, in France, have busied themselves especially with the subject. Their results, however, are as yet decidedly divergent and inconclusive.

Without going deeply into their experiments, we can summarize the results obtained as follows:

Rappin's experiments were valueless. The diplococcus that he thought he found was found also in cultures made from healthy tissues.

Ballance and Shattuck worked more carefully, and with a great number of cases. Their culture experiments, on the whole, gave negative results; only a small proportion of their specimens gave them micro-organic cultures. Nearly ninety tumors, in all, were used. Nevertheless, the experimenters still hold to the parasitic theory as the most probable one to explain malignant new growths.

Scheurlen experimented with ten carcinomata of the breast. He found oval, greenish, shining bodies, which he called the spores of the carcinoma bacilli. The bacilli themselves could rarely be seen. He claims to have been successful in his cultures, and to have obtained bacilli containing oval, greenish, shining spores, identical with those obtained from the juices of the tissue itself. Inoculation experiments on dogs, etc., were, to say the least, inconclusive.

Scheurlen's researches have convinced a few competent judges, but the great majority believe his claim to have discovered the etiological factor of carcinoma to be premature. It is concerning the real nature of Scheurlen's spores and bacilli that investigators are now busying themselves.

Schill also has claimed to be able to demonstrate, by a modification of the Gram method, the presence in carcinomata of staff-shaped organisms which color only at the poles. His experiments are not yet completed.

Domingos Freire, of Rio de Janeiro, now claims that the objects shown by Scheurlen are identical with those already demonstrated by himself as the cause of carcinoma.

We may hope shortly to obtain some definite proof or disproof of these conflicting experiments.

E. Klein has been investigating an epidemic of foot-and-mouth disease in Bedfordshire. He obtained a micrococcus, which he cultivated, but could not inoculate. But on feeding four sheep with infected fodder, two developed typical disease of the feet, though mouth and general condition remained normal. One of these animals recovered after several weeks of sickness; the other was killed on the fifth day of its sickness. The internal organs were found normal, save for hæmorrhagic spots on the spleen. But in the vesicles and ulcers of the feet, micrococci similar to those obtained before were found and cultivated.

Fourteen guinea-pigs were fed with infected food; three died, one was killed and found normal. In those that died no characteristic lesions were found, but in two chain-cocci were found in the blood, and in one the pus of an abscess. Inoculations with pus and blood were negative.

The author believes he has discovered in this micrococcus the etiological factor of the disease.

Since animals that had been inoculated remained entirely unhurt when fed with infected material, Klein believes that he can obtain a protective virus by cultivating the chain-cocci found in the vesicles. These inoculations do not disturb the general health. He draws no absolute conclusions, however, pending some experiments on cattle now under way.

INFANTS' FOODS.—The conditions formulated by the Committee on Infants' Foods at the American Medical Association are approximated more nearly by Carnrick's Food than by any other with which we are familiar.—*Philadelphia Medical Times.*

EFFECTS OF LIGHTNING ON HORSES.

STALLION PANCOAST PARALYZED—RECOVERY.

By A. Liautard, M.D., V.M.

A violent thunder storm broke over Parkville, L. I., and its vicinity, between nine and ten o'clock on the evening of Friday, the 15th of June ult., which was characterized by an unusual amount of electric disturbance, especially noticeable in the neighborhood of the breeding establishment of Mr. Shultz in that village. In this place was a special pavilion containing two large and well-fitted box stalls for the accommodation of two valuable stallions, Cuyler and the celebrated Pancoast. During the storm this building was struck by the lightning, the current entering the stable of Cuyler through the window, and crossing from thence obliquely over to that of Pancoast. But while passing towards the door it encountered an iron hook, and being reflected, as it seemed, in the same direction, had made its exit a few inches from the window at which it had entered. The stallion Cuyler remained unhurt. The men employed in the stable, who were at this moment some two hundred yards distant, hurried to the stable of Pancoast, which they found in flames, the bedding, blankets and other objects already burning. The fire being extinguished, the horse was found prostrate, having been knocked down by the shock. He was lying " in a heap " on his off side, with profuse epistaxis from both nostrils. He was at once well rubbed over the entire body with liniments, and in a couple of hours became able, though not until after two unsuccessful attempts, to regain his feet, though requiring for this the assistance of twelve men.

Dr. Ashe, of Brooklyn, the attending veterinarian of the establishment, then arrived, and to him I am indebted for the history of the case previous to the day of my own visit.

When the Doctor reached the place the horse was on his feet, and he remained in that position for ten or fifteen minutes, wearing a drowsy look, but while being rubbed dry, again went down. The effort to keep his feet caused a shaking of the entire body, and he staggered to such a degree that artificial assistance and bracing were necessary to enable him to keep up in any case.

After going down the second time he remained on his bed for about an hour, breathing laboriously, and appearing to suffer great pain. His pulse changed from about sixty-five to seventy. Cold water was applied on the head during the night. He was also raised up, with much assistance, and a form of treatment prescribed, consisting of hot fomentations to his back and strychnia internally in grain doses every four hours. His pulse had subsided and he presented then the same appearance as when I first visited him, but in a greatly aggravated form. At that time he was unable to grasp or to masticate his food, although if it was forced into his mouth he would chew well enough on the right side, though the masticated ball would collect and lodge on the left, between the cheek and the teeth.

On the 16th, at 12 A. M., he was put in slings and rested well in them, and at 2 o'clock he micturated for the first time since he was injured, his urine being highly colored. He had before defecated in a normal manner. The same treatment was continued, the slings being removed in the evening.

On the 17th in the morning, the slings were again applied and continued on during the day, to be again removed at night. During the day he laid down for three hours, and rose again with but little assistance, that of but one man at his tail. The slings were put on again on the 18th and kept on, and on the 19th a stiff blister was applied over the poll, on each side of the median line. The warm fomentations on the back were discontinued, but the strychnia was continued. On the 20th, the slings were dispensed with altogether. The blister was again renewed on the 26th, and up to my visit on the 28th of June, the same internal treatment was persevered in, being followed with gradual, though slow improvement.

The following were the prevailing symptoms at the period of my visit, varying only from those which were present at the origin of the case by the diminished degree of their force and severity:

The animal was in a large box stall, and although he carried his head slightly down, and appeared sleepy and drowsy, yet his general condition was favorable. Upon removing the mosquito net covering from his head, (placed there for protection from the flies), he appeared with his head slightly extended and carried to the left, with the tip of the nose turned slightly upwards and to the right. The right ear was well erected and moving quickly, the left lopping down, being somewhat scorched at the lower commissure of the concha, and showing at that point a little abrasion or cutaneous wound. The right eye was somewhat injected, but in normal order, but the left was partially closed by the droping of the upper lid, the globe being turned downwards and immovable, and the pupil widely dilated, with a well marked amaurosis. The upper lip seemed to be normal, but the left was somewhat paralyzed, the left portion of it and the left commissure hanging down. The general sensibility of the skin seemed to be somewhat diminished, pricking with a sharp pencil being scarcely noticed. While standing, his legs were kept somewhat apart as if in consciousness of his instability. When compelled to move, his debility became apparent, his weakness of motion suggesting a compound of the action of locomotor ataxia and general paralysis. There was no dragging of the toe, no knuckling, no lateral staggering; it was a general giving way. The loins were very sensitive and flexible, perhaps a little of this being due to the application of hot compresses, which had somewhat blistered the surface. He generally kept on his feet and went to sleep, and in his sleep or drowsiness would suddenly fall, lying still and resting for several hours and then getting up unassisted. He drank freely and his appetite was good, though he had much difficulty in grasping grass. His mode of prehension of his food was peculiar; he would take a large bite, filling his mouth, and chew it and then possibly let it drop, but only to take it up again. All the functions were otherwise perfect. His temperature, his pulse, his respiration, his digestion, etc., etc., seemed perfectly normal.

It was a well marked case of general paralysis, with a correspondence equally well marked between the lesions present and those which may be observed in the human subject in similar cases, involving the loss of power in the extremities, and the injury to the cranial nerves, as seen in the lesions of the left eye and in the facial palsy.

The treatment which was suggested and adhered to by Dr. Ashe, has thus far authorized a confident expectation of ultimate recovery. This treatment has consisted in counter irritation over the poll and the loins, and nervous stimulants in small and repeated doses, with alteratives and diuretics. The galvanic current was also suggested, in case the paralytic symptoms should prove persistent, but no occasion for resorting to its application seemed to arise.

SHEEP DISEASES: THEIR CAUSES, NATURE AND PREVENTION.*

By Thomas Walley, M.R.C.V.S.

In considering this subject I shall, as far as is possible, avoid technicalities and shall compress my subject into as limited a space as is compatible with its intelligent consideration.

Beginning then at the foundation, I shall deal with the *physiology of animal life* so far as it has to do with the production and prevention of disease.

The blood is the life, and the source of the blood is the alimentary matter we ingest; and if the food does not contain all the elements—and the proportion of elements too—necessary to the formation of the vital fluid, life cannot be maintained.

Recognizing this important, this vital fact, I shall, in the first place, endeavor to make plain the nature of this source and supporter of life; and, in the second, how its vitality is to be preserved.

The blood *is not* a *formed*, it is a *formative* tissue; it is not a simple fluid, but a highly complex one, and like all complex matter, is very susceptible to the action of surrounding influences. It is made up of fluids and solids which bear a definite proportion to each other, and any departure, past moderate limits, from this correlation inevitably produces grave consequences.

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*Transactions of the Highland and Agricultural Society of Scotland.

I do not wish you to imagine that the blood is every day and every hour the same; the opposite is the fact. Probably it is never the same for even consecutive minutes of time. Now its fluid elements are in excess, then its solids. One hour it contains more saline elements than are absolutely necessary to enable it to perform its function; another it is deficient in such elements. One minute its flesh-forming constituents predominate, the next its respiratory; but all the while a certain and necessary correlation is kept up. Cross the boundary line and health ceases to be maintained, nutrition becomes impaired, the vital elements of the cell elements of the body gain not their normal stimuli and support, and disease takes the place of health.

I have said that the blood is composed of fluids and solids. It will, perhaps, astonish a few when I say that the proportion of water in 1,000 parts of blood is between 800 and 900, but this water, large as the quantity appears to the uninitiated, is absolutely necessary to preserve its normal fluidity and to enable it to circulate freely through the great streams and little rivulets of the system. As well might the farmer attempt to irrigate his pastures with mud, as the heart and arteries to circulate the blood if its volume of water were materially diminished.

Not only is this water necessary for the purpose of facilitating the distribution of the blood, it performs the office of preserving the solubility of the materials necessary for the support of the system—of preserving, in other words, these materials in the condition in which they may be absorbed and assimilated; and in order to render this solution perfect it contains certain chemical substances of an alkaline nature which possess the property in themselves of dissolving, or, more accurately speaking, of holding in solution the albuminous and fibrinous substances (*colloids*) of which the flesh (muscle) is composed. Amongst the other chemical constituents of the blood we have soluble phosphatic salts, *i. e.*, phosphate of lime and magnesia, both absolutely necessary for the building up and nourishing of the bony frame and the nerve and brain tissues. Carbonaceous material, fats (*hydrocarbons*), and starch, sugar, etc., are also important elements of the blood serum, as by them the fatty tissues are supported, and food for respiration and the production of heat by oxidation is supplied.

The so-called solids of the blood consist of little bodies, known as cells or corpuscles; and inasmuch as some of these are colorless, while others, when in bulk, are of a red color, they are distinguished respectively as white (leucocytes) and red cells. The former of these are the larger, and they are endowed with the power of motion in a limited degree and of actively altering their shape. The latter are much smaller and are practically devoid of the power of motion; they are believed to be the highest stage in the development of the white cells.

Both these bodies are absolutely necessary in the blood, and to the white cells is now ascribed a function which, until recently, was only suspected, viz., the function of destroying injurious organisms, such as the germs of disease—devouring them, in fact—and of removing dead matter from the tissues; they are the scavengers of the system, and are as voracious as jelly-fish, closing over the object of their attack and digesting it, or all of it that is capable of being digested, and ejecting the remainder into the blood stream. By their agency, too, the solid parts of the blood—even the red cells—are removed from the tissues when that fluid is poured out into them as the result of an injury or in consequence of disease. If, in other words, an individual is unfortunate enough to get a "black eye," these little bodies set to work and, by breaking up and removing the red cells, upon which the color of the bruise is dependent, they restore the damaged tissues to their original condition. Moreover, the white cells rush into the breach whenever a wound is inflicted, and not only preserve the exposed tissues from the action of injurious organisms, but supply all the means by which the breach is filled up.

The red cells have equally as important, and even more important, an office to fulfill. They are the means by which oxygen is carried to the tissues for the purpose of oxygenation or decarbonization. They are, in other words, the conveyancing media of the gas (oxygen) necessary for the purpose of burning up the excess of hydrocarbons and carbohydrates, thus getting rid, to a large extent, of effete and injurious material, and of keeping up the animal heat. The actual agent by which their oxygen-conveying function is performed is iron, and it is upon this element also that the cells are mainly dependent for their red color. Deficiency of iron means deficiency in oxygen, and the blood assumes a dark color—becomes venous, instead of being a bright red or scarlet color, as in arterial blood.

The existence of a third corpuscle is now recognized by many physiologists, but to the character and functions of this I need not allude in detail, further than to say that it is believed to be the originator of the other cells; hence it was called by Hayem a *hœmatoblast,* or blood-former.

That the blood is possessed of vitality is shown by its power, on withdrawal from the vessels, of undergoing coagulation—a process brought about not by the existence, as was once supposed, of fibrin as fibrin in the blood, but by the action of a ferment upon two substances pre-existent in that fluid, known as *fibrinogen* and *fibrinoplastin.*

The second problem we have to consider *is the means by which the vitality of the blood is maintained.*

I have already said that the source of the blood is the alimentary matter we ingest or take into our stomach and bowels in the ordinary processes of eating and drinking, and again I repeat that in order for the preservation of the equilibrium in the different constituents of the blood, the ingested matter must contain all the elements, and that too in due proportion, necessary for their supply. In other words, the food must contain a due proportion of flesh-forming matter, of heat producers, of alkaline salts (potash and soda), iron, phosphorus or phosphoric acid, magnesia and lime; with a few other elements of a less important character, such as sulphur. Before considering the effects of improper alimentation in the direction of inducing diseased processes, it will be useful to glance briefly at the effects of adverse agencies on the blood itself. Looking at the blood in the light of its vast importance in the animal economy, it would seem at first sight that it ought to be a stable tissue. Nothing, however, is further from the truth than is such a supposition, as even quantitative deficiencies or excesses in its elements are sufficient to induce grave changes, both structurally (histologically) and functionally (physiologically); thus, if water is deficient in quantity the blood becomes thick, its plasticity is increased and, as a consequence, there is a great tendency to stagnation (congestion). If water is superabundant, the colloids are held in an undue state of solution, the coloring matter is dissolved out of the red cells, and the walls of these little bodies may be actually broken up or disintegrated. Not only is this the case but, owing to the macerating process to which they are subjected, the white cells are injuriously acted upon, and the elements entering into the composition of the walls of the blood-vessels (particularly of the capillaries) become weakened and their vitality lowered, and they allow of the easy escape of serum into the tissues and cavities of the body, and thus we have produced *dropsies* (effusions). It is a well-known fact, too, that an excessive draught of cold water when the system is heated, will, particularly in man, determine an attack of *nettle-rash* solely by its effects on the blood and the glands; and more than this, repletion and congestion of important organs is frequently produced by similar causes.

The colloids (proteids) of the blood are absolutely necessary, not only for the building up of the muscular and other tissues, but for their ordinary repair, as well as for the restoration and repair of tissues destroyed or damaged by disease and injury; and any deficiency therein must be compensated—the compensation taking place at the expense of the tissues. The colloids are rapidly disintegrated or used up in all important diseases, especially fevers, hence the rapid emaciation (wasting) which is associated with and follows disease, and hence the value of giving albumen and fibrin in a readily assimilable form—as eggs and milk—in the treatment of fever.

Excessive using up of the proteid elements, means not only emaciation, it means arrested growth, general debility, dropsy and often permanent impairment of the general health; degraded proteids being passed out of the system as useless material by the kidneys and not again made use of.

Great excess in these matters tends to the production of congestions and inflammations—produces, in fact, the so-called inflammatory diathesis, or a tendency to inflammation.

The heat and force-producing elements, though existing only in very small proportion in normal blood, are vitally as necessary to the well-being of the system as are the proteids. If they are deficient and cannot be obtained from the food, they must be got from the tissues—especially the fat—and if they cannot be obtained at all, heat production ceases and life is extinguished.

Fat is the first to become absorbed and burnt up in wasting diseases, but it is followed, or perhaps sometimes preceded, by the consumption of the proteids.

Excess of carbonaceous elements in the form of fat produces debility and interferes with the vital activity of the cells of the body, as well as predisposes to stagnation. Moreover, if this excess is kept up, the cells of the tissues of important organs become firstly, infiltrated with fat; secondly, actually transformed into fat. Independently of carbonaceous matters being required for respiration and production of heat, fat constitutes the basis of muscle, and no animal can thrive or even live if deprived thereof. Such elements frequently save the more important proteids from oxidation or burning.

Of the salts of the blood it cannot be said that one is more important than another. *Chloride of sodium* (common salt) is probably the most necessary for the preservation of health, and its withdrawal, or its absence from the blood, is followed by the gravest consequences. Salt (sodium) is required not only for the blood, it is necessary to the formation of the gastric juice and of the bile and for the digestion of albumen; and of the fact of its presence in the blood I cannot give a better proof than that which may be obtained by tasting the perspiration or the tears. Nature cries out for it, as is shown in the wandering of the denizens of the wilderness in search of it, and it is provided for them in the form of "salt licks."

Excess of salt is highly injurious, interfering as it does with the skin glands, and with the blood, inducing important skin diseases—*e. g.*, scurvy in man and eczema in certain animals, particularly in dogs.

That *potash* is necessary is proved by the fact of its forming a constituent part of the material food of animals, viz., vegetables.

Deficiency in this salt means impaired tissue nutrition; excess of it means excessive fluidity of the blood, increased activity of the kidneys, by which it is excreted, and dropsies. If the excess persists, defibrination of the blood follows and important forms of skin eruption are produced; the kidneys too become organically deranged.

The phosphates are absolutely necessary for the building up and nourishment of the bones and teeth; and if they are not supplied in due quantity, the former become soft and thus you have produced the various forms of bone softening, such as *rickets* and a tendency to fractures, as is sometimes seen in pregnant mares. Moreover, the teeth are imperfectly or slowly developed, and when developed tend to decay, and thus you have the late dentition (cutting of teeth) common to animals reared on poor lands, and the cases of rotten teeth (caries) which are so often seen under similar conditions.

Phosphorus is a constituent of nerve matter, and neither can growth go on nor can the functions of the brain be performed without it; and it must be remembered that animals cannot make up for deficiency in phosphorus in their ordinary food in the same way as man does by eating fish.

But while phosphorus in due proportion is necessary and beneficial, not only it, but phosphates also, in my opinion, may become baneful. Physiologically we know that phosphorus possesses the property, if given in excess, of dissolving and breaking up the blood cells, of causing very rapid fatty degeneration of the coats of the blood-vessels and of such important organs as the liver and of degrading the colloids of the blood: as a result of this, we get spontaneous flowing out of the blood (hemorrhages) into the tissues, and the passing out of albumen and broken-up red cells, with their coloring matter, with the urine. Superphosphate of lime also possesses the same properties, as was well illustrated some years ago in the case of cattle depastured on land near Liverpool which had been recently topdressed with this agent; the case came under the observation of Mr. Welsby, F.R.C.V.S., West Derby.

Without iron no animal could exist for one moment, and small though its quantity in proportion to the other elements of the blood, it yet performs a most important function, viz., the carrying of oxygen to the tissues; the effects of the withdrawal or non-assimilation of iron are quickly seen in the pale color (pallor) of the visible mucous membranes—as of the eye, nose and mouth; and in man, in the blanching of the skin. In all animals the effects of its loss are seen in the excessive rapidity of respiration for the purpose of compensating, by the quantity taken into the lungs, for the small quantity of oxygen which the blood cells are capable of carrying to the tissues.

It is now demonstrated also that iron acts as a stimulant to the liver.

An animal in whose body iron is deficient becomes comparatively bloodless, though its carcass may be laden with fat; it is said to be *anœmic*, and if this condition is pushed too far it dies.

Iron may exist in abundance, but by the influence of adverse agencies, such as the action of disease or disease germs, the red cells may be incapable of appropriating it; and thus, in the midst of plenty an animal may die of oxygen starvation. If iron is assimilated in superabundance, an opposite extreme is induced, viz., *excess of blood* (hyperæmia), and inflammations may result.

Not only phosphorus, but, as has recently been shown, a salt of potash (the chlorate) has the power of so changing the coloring matter of the blood as to render it useless and to cause it to be passed out by the kidneys, giving to the urine a peculiar but characteristic color. Carbonic acid renders the blood dark and displaces oxygen. Carbonic oxide heightens the color but brings about such a change in the condition of the iron as effectually to prevent re-oxidation; hence the primary and secondary effects of exposure to the gases given off in combustion or fires and hence the blood-stained urine we sometimes see passed by animals which have been exposed to the influence of those gases in burning stables and cowsheds.

Having described some of the characters of the blood, I will now consider the influence exerted upon it by the more important organs and functions of the body, viz., by digestion and assimilation, by oxidation and nutrition; by the liver, the bowels, the mesenteric glands, the kidneys, the spleen, the lungs and the skin.

Digestion.—The first act of digestion is performed in the mouth, when food is broken up by the teeth and exposed to the action of the *saliva*, which secretion converts the starcy matter it contains into sugar by the action of a ferment (ptyalin). The process is most perfect in ruminants. The second act in digestion takes place in the stomach, where the acid secretion—gastric juice (succus gastricus)—dissolves mineral and other matters, while by the action of a second ferment (pepsin) albumen is rendered more soluble and converted into substances known as peptones. The third act in digestion is performed in the small bowels, where the food meets with the secretion of the pancreas (sweetbread), the pancreatic juice; and with the secretion of the liver, the bile. The bile also contains a ferment which, to some extent, also converts starch into sugar. It is alkaline, and in a slight degree dissolves and emulsifies fats; it is also supposed to act as a natural purge in the intestines, and to prevent decomposition by acting as an antiseptic.

The pancreatic juice (succus pancreaticus), like the bile, is alkaline; it converts starch into sugar to a much greater extent than does the saliva, and as in the gastric juice, so in this, a ferment (trypsin) exists, which has the power of converting albumen into peptones; it also splits up and emulsifies fats: both bile and pancreatic juice convert a small quantity of fat into soap.

Into the small bowels a secretion is poured, known as the intestinal juice (succus entericus) which, in a modified degree, assists the other juices mentioned.

In the large bowels, acidity replaces alkalinity and certain constituents of the food are rendered soluble and probably digested.

Some of the soluble matters of the food are absorbed partly from the stomach, but more largely from the intestines; the more important constituents are mainly taken up from the small intestines by the lacteals and the tributaries of the portal vein.

It is evident, from what has just been stated, that perfect and healthy digestion and the nourishment of the blood and the tissues depends entirely upon the perfect and healthy action of the important organs to which I have referred.

Fortunately, the salivary glands and the pancreas are rarely, practically I may say never, found diseased in the sheep. The stomach, being of very complex arrangement, is frequently deranged; and here I should observe that the three first compartments of the stomach of the sheep serve a useful purpose in assisting to break up (comminute) and to soften the food presented to them and thus prepare it for the more important process to which it is subjected in the true digestive stomach—the fourth.

It would be well for animals, as also for ourselves, if we could say the same of the liver as of the salivary glands and the pancreas; unfortunately, there is no gland in the body more subject to functional and organic derangement than this. I say unfortunately, not only on account of its secreting bile, but on account also of certain processes which go on in its interior and upon which the support of life depends.

In the liver, many of the constituents of the food—*e.g.*, the carbohydrates (not the fat) and, according to some authorities, the peptones, are converted into a substance known as *glycogen*, a sweet substance somewhat resembling sugar. Glycogen is supposed to be produced by the action of a ferment and to be stored up in the liver until required in the system, when it is reconverted into sugar and discharged into the circulation for the purposes of generating heat and muscular energy. Hence, the liver has been described as a "coal bunker" to the body.

In addition to this function, the liver *destroys the used-up red cells of the blood* and it is from their coloring matter that the coloring matter (pigment) of the bile, and also of the urine, is mainly obtained. Another important function served by the liver is to *prevent* the *entrance* of *injurious substances into the circulation*—to act, in other words, as a guard to the blood. Thus, the very substances upon which life is largely dependent, viz., the peptones, if taken from the intestines and injected directly into the blood would kill, but by passing through the liver they are not only rendered harmless but useful. In the intestines, peculiar poisonous substances (ptomaines) similar to those produced in the decomposition of animal flesh, and from which so many anatomists and others have lost their lives by inoculation in dissecting, are constantly being formed; the liver seizes on these, as it were, and sends them back into the intestines, whence they are ultimately got rid of in the dung (fæces). Even that deadly poison with which Indians have for ages poisoned their arrows, known as curara-woorara, or the woorali poison, is harmless when swallowed; and this, it is believed, is due to the guardian function of the liver.

One substance of importance is found largely in the liver, and acts as a stimulant to it, viz., *iron*, and when it is given in overdoses, it is believed that the liver returns it to the intestines.

The cells of the liver after a meal contain large quantities of fatty matter, become infiltrated with it in fact, and if feeding on such matters is persisted in, fat takes the place of the normal tissue elements and the organ becomes practically a mass of fat—as seen in the liver (pate de foie gras) of Strasburg geese. *Fatty transformation means annihilation of all those important functions to which reference has been made.*

No bile is secreted, consequently it is lost for digestive purposes, for stimulating the activity of the intestines and for antiseptic purposes; and it is largely owing to the last fact that purgation takes place in the advanced stages of liver disease—arrest of the secretion of bile leading at the outset to constipation. The opposite condition of softening, *i. e.*, fibroid change, takes place from the action of continued irritation as in sheep and cattle by the fluke worm (in rot); and in man, by over-indulgence in spirits, the organ becomes hard, constituting "gin drinker's liver." Moreover, if the liver is not acting, poisonous matter is absorbed and produces its deleterious effects on the brain and nervous system generally, as well as upon the blood.

(*To be continued.*)

Clark—"Well, I will declare! Smithers, how you have picked up lately." *Smithers*—"Yes, yes; things were bad enough with me a little while back, but I happened to run across the advertisement of B. F. Johnson & Co., of Richmond, Va., and they put me in position to make money right along. If you know of anybody else needing employment, here is their name and address."

SNAKE BITE AND ITS ANTIDOTE.—1.

EXPERIMENTS WITH CROTALUS VENOM AND REPUTED ANTIDOTES, WITH NOTES ON THE SALIVA OF HELODERMA (" GILA MONSTER.")

By H. C. Yarrow, M.D., Curator Department Reptiles, U. S. National Museum.

(From Forest and Stream).

In 1664, Francisco Redi, an Italian, of whom Huxley says he was "a man of the widest knowledge and most versatile abilities, distinguished alike as a scholar, poet, physician and naturalist," published the first work extant upon the nature of serpent venom. It was called " Osservazione Intorno alle Vipera," and was printed at Florence.

In this rare book are corrected many of the popular superstitions and fallacies prevalent at that time. Although little was added to our actual knowledge of the properties of venom and its composition, still the author is entitled to the credit of having been the pioneer in this class of literature. From Redi's time up to the present day, a multitude of observers in this country and abroad have given to this subject much patient study and research, with a view to discover some means by which the suffering and deaths due to serpent venom might be averted.

In 1672 there was published in Paris a volume of 245 pages, by Moyse Charas, entitled " Nouvelles Expériences sur la Vipere," which contained a reply to certain strictures upon his work made by Redi, and it is interesting to note the many curious remedies suggested by this writer, who appears to have placed great faith in what he calls the " sel volatile de la vipere," a preparation made by distilling chopped-up vipers, old and young.

In 1702 Dr. Richard Mead—afterward physician to George II. in 1827—published an account of his investigations upon the subject of snake poisoning, which is interesting although not of much practical value.

From 1702 for sixty odd years nothing of consequence was published, but in 1767 at Lucca appeared the great work of Felix Fontana, entitled " Richerche Filosofiche Sopra il Veneno della

Vipera," a work so important that it has been translated into several languages. As an example of the amount of work done by this industrious and learned Italian, it may be mentioned that he performed over 6,000 experiments, employed over 3,000 vipers, and had bitten more than 4,000 animals. His most important discoveries were, first, with regard to the actual position of the poison gland, which is above and behind the fang, Mead and James having declared that the venom was contained in the fang sheath ; second, that the venom of a viper was not hurtful to the reptile itself if injected beneath the skin, or if a bite was inflicted by one of its own species; third, that venom was harmless to cold-blooded animals, such as leeches, slugs, snails, and some harmless serpents; fourth, that viper venom is poisonous to all warm-blooded animals ; and fifth, that venom was not absorbed by mucous membranes. It is interesting to note that the conclusions of this distinguished naturalist have been verified repeatedly by later observers.

In 1777 M. Sage, of the Academy of Sciences at Paris, published a pamphlet recommending the use of ammonia in snake bite, which plan of treatment, however, was not original with himself, as it had already been recommended by Jussieu. It was based upon the theory that the active principle of the venom was an acid salt, but Fontana, who later on performed a number of experiments with it, condemned ammonia as useless, if not hurtful. With regard to the acidity of venom, Mr. Vincent Richards states that first it is acid, but soon becomes neutral, and this fact has been verified by the writer.

In 1796 Dr. Patrick Russell studied the subject of serpent poisoning, and the results are embodied in a book which was published by the Court of Directors of the East India Company. He performed a number of experiments with Indian serpents, and brought into notice the famous Tanjore pill, the principal ingredient of which is arsenic, in which, it may be added, he seems to place but little reliance, as he recommends in addition either immediate amputation or the ligature. Dr. Russell, it is claimed, was the first to show the error of the popular belief that the mungoose is proof against the venom of the cobra. It is true that if this little animal is left alone with a cobra, he is invariably victorious, but if bitten by the snake he inevitably succumbs. It is a curious fact, vouched for by Mr. Vincent Richards, that after the conflict the victorious mungoose gnaws out the cobra's fangs. Dr. Russell's book is interesting as marking some onward progress in the study of venom, but it can hardly be considered as a very valuable contribution to knowledge.

In 1799 a Mr. Boag, in studying methods of treatment in snake poisoning, advocated the use of nitrate of silver and nitric acid baths, as well as the salts of mercury, but curiously enough, he seems to place great reliance in human saliva as an antidote, probably because it was recommended by Seneca and the elder Pliny. Arsenic he unhesitatingly condemns as being as dangerous as the venom. He believed that death after snake bite resulted from an abstraction of oxygen from the blood, and to overcome this he proposed a speedy oxygenation of the system by artificial respiration, and other methods of procedure. This gentleman made a number of experiments to prove his theory, all of which were unsuccessful.

In 1801 Mr. John Williams advocated the claims of ammonia as an antidote, and gave a history of several cases, which he believed had been saved by this agent, and, in 1809, Dr. Macrae, who was bitten by a cobra, stated that his recovery was due to thirteen spoonfuls of ammonia which he swallowed.

Mr. Breton, in 1825, published the results of a series of experiments with serpent venom, but he was evidently mistaken in his statement that "an innoxious snake can be killed by the venom of a poisonous snake."

In Vol. II., 1826, of the "Medical and Physical Transactions of the Calcutta Society" may be found an article by Dr. Daniel Butler on snake bite, in which he recommends the administration of opium, brandy and sulphuric ether in cobra poisoning, his treatment being founded upon the theory that the heart and arterial system are principally affected, an hypothesis now known to be untenable, as we know that the principal action of cobra poison is upon the respiratory centres. He also recommends the use of the ligature, dry cupping and suction of the wounds, and gives the history of several cases.

Dr. Davy, in 1839, published an account of some experiments with the poisonous snakes of Ceylon, but his studies possess little, if any, practical value.

From this period until 1860 nothing of importance was published regarding antidotes to serpent venom, although it should be mentioned that various papers on the subject of reptiles and their venom had been published from time to time by such observers as Dr. Barton, Mangili, Prince Lucien Bonaparte, Bernard Gratiolet and others. Brainard and Green recorded their researches in 1853, the former publishing a separate essay in 1854.

In 1860 the Smithsonian Institution accepted for publication a work which has become classic, and which appeared in January, 1861. It was entitled "Researches upon the Venom of the Rattlesnake, with an Investigation of the Anatomy and Physiology of the Organs Concerned," by S. Weir Mitchell, M.D.; and this quarto of 117 pages has done more to advance our positive knowledge of crotalus venom than any previous publication. The conclusion reached by Dr. Mitchell, as a result of his studies so far as antidotes were concerned, was that none of those in reports were reliable. About the same time that the work already mentioned was passing through the press, a paper by the same author, entitled "On the Treatment of Rattlesnake Bite, with Experimental Criticisms upon the Various Remedies now in Use," appeared in the *North American Medico-Chirurgical Review*, 1861, V., 269, and gave the results of numerous experiments with so-called antidotes, and in summing up the author recommends no special plan of treatment, but advises the ligature, or excision, or both, with the administration of stimulants; in short, the general symptoms are to be treated according to the indications.

Another essay by the same author appeared in the *New York Medical Journal*, 1868, entitled "Experimental Contributions to the Toxicology of Rattlesnake Venom," and in this Dr. Mitchell corrected some of his views published in previous papers.

Following the essays of Mitchell in 1872 came the magnificent folio work of Dr. Joseph Fayrer, of Calcutta, entitled "The

Thanatophidia of India," being a description of the venomous snakes of the Indian peninsula, with an account of the influence of their poison and life, and a series of experiments, London, 1872. This work, beautifully illustrated with thirty-one imperial folio plates drawn from life by native artists, is a veritable monument of patient research, and a most valuable contribution to our knowledge of the effect of the venom of the different poisonous snakes with which India is so abundantly supplied. Unfortunately, so far as mitigating the loss of human life is concerned, the author is obliged to admit that no plan of treatment can be absolutely relied upon, as he tested every known or asserted antidote. In treating a case of serpent bite he would employ ligature, excision, and general treatment.

A number of other papers have appeared from time to time, all more or less valuable, by such well-known authors as Dr. Shortt of India, Harford of Australia, Brunton and Frayer, Vincent Richards, and others, but in none of them is an account of any discovery of a physiological or chemical antidote to serpent venom, once it is diffused through the circulation.

In 1881, however, Dr. J. B. de Lacerda, director of the physiological laboratory of the National Museum of Rio de Janeiro, electrified the scientific world by announcing to the French Academy of Sciences that he had discovered in potassa permanganas an absolutely reliable chemical antidote to the venom of the bothrops, a poisonous South American genus of serpents. In the experiments which were made upon dogs, the venom dissolved in water was injected beneath the animal's leg, and in from one to two minutes afterward a one per cent. solution of permanganate of potassa was thrown into the wound made by the syringe. In other cases the permanganate solution was thrown directly into a vein, and out of thirty cases only two of the animals succumbed to the effects of the bothrops venom. In some instances the permanganate was not employed until the characteristic symptoms of poison manifested themselves. He formally expressed himself that in this salt we possess an absolutely reliable chemical antidote.

It was not to be supposed that such astonishing results could be accepted without further experiments by various persons, and in 1882 Dr. G. Badolini, of Bologna, repeated Lacerda's experiments and signally failed. Mr. Vincent Richards, of Calcutta, who had been a member of the Snake Poison Commission in India, having learned of de Lacerda's studies, at once instituted a series of experiments to verify if possible the statements made, publishing his conclusions in the *Indian Medical Gazette*, Calcutta, XVII., I., 57, 85. He is of opinion that the salt is not, strictly speaking, an antidote, but that it may prove of service in neutralizing the venom while in the tissues, but is of no service if the poison has been absorbed into the general circulation. In his over one hundred experiments he used solution of cobra poison and permanganate solution varying in strength, and from his well-known careful method of working, great reliance may be placed in his statements. His remarks in summing up will be given further on.

Theodore Aron, one of Prof. Binz's assistants at the University of Bonn, also experimented in 1882 with the permanganate as an antidote to cobra poison, publishing his results in the *Centralblatt für Klinische Medizin*, Bonn, 1882, No. 31, Nov. 18, and states that he saved some animals by its uses, but he seems to attach much more value to the use of a solution of chloride of calcium, for out of twenty-two experiments with this salt he saved seventeen of the rabbits which had been inoculated with the venom. He also used alcohol, caffeine, atropine and bromine as antidotes, but all failed.

In April, 1882, Dr. Couty, who had assisted Dr. de Lacerda with his experiments in Brazil, sent a communication to the Academy of Sciences of Paris, in which he stated that, after having made experiments himself, he was obliged to conclude that the permanganate had no antidotal effect upon serpent venom; when in the circulation all of the animals inoculated died. De Lacerda, in answering the statement of his former colleague, mentions that a rupture of friendly relations had taken place between himself and Dr. Couty, and explains why the latter had failed, when he himself had almost invariably succeeded. Space will not permit of this being repeated here.

It is but fair to state in connection with the credit given to de Lacerda that Dr. Armand Gautin of Paris, about the same period, in experiments with cobra and rattlesnake poison, came to the conclusion that a solution of caustic potassa acted as an antidote to the venom, and his memoir was read before the Academy of Medicine, July 26, 1881.

In 1884 Dr. de Lacerda published in Rio de Janeiro an 8vo. volume of 200 pages, entitled "Leçons sur le Venin des Serpents du Brésil et sur la Méthode de Traitement des Morsures Venimeuses par le Permanganate de Potasse," in which he reiterates his opinion regarding the antidotal value of the permanganate, and states that his discovery is "a veritable scientific and humanitarian conquest of which the happy results have been verified a thousand times, not only in Brazil, but throughout the world." In closing he says: "It is not for my country alone that I have written these pages, for I hope they will be read in many parts of the globe. It is for this that I appeal to the competent men of all countries, begging them to correct any faults or errors I may have made, and to fill up the gaps that may exist in this book." The writer would state that these few sentences of Dr. de Lacerda instigated him to perform the experiments which will be given hereafter.

Much attention, of late years, has been attracted, especially in the British colonies, to the so-called discovery by Dr. George B. Halford of liq. ammonia as an antidote to serpent venom, and while the intravenous injection of this liquid may have originated with him, the substance is one which has been repeatedly tried and failed, even so far back as the time of Fontana. Halford's theory appealed so strongly to the popular mind that in Melbourne, Australia, hundreds of hypodermic syringes were sold to the settlers, who fully believed they held in their hands an absolute antidote to the bites of venomous serpents. Sir Joseph Fayrer and numerous observers have found it entirely useless in cobra poisoning, and Mitchell states that as a stimulant it is far inferior to alcohol.

It is only fair to Dr. Halford to state that he reports a number of apparently authentic cases of snake bite in which the patients recovered after ammonia had been injected into the veins. The writer may add that in his experiments with the liquor ammonia the results were astonishingly disastrous. These experiments will be related in another part of this paper.

The action of the venom of the copperhead (Ancistrodon contortrix) has been studied in 1883 by Dr. Isaac Ott, of Easton, Pa., and finally has appeared the magnificent study of venoms by Dr. S. Weir Mitchell and Dr. Edward T. Reichert, published as one of the "Smithsonian Contributions to Knowledge." So far as the writer knows, with the exception of a few unimportant papers, the subject of serpent poisoning and antidotes has in this review been brought up to date.

(*To be continued*).

AMERICAN VETERINARY COLLEGE.

HOSPITAL DEPARTMENT.

FATAL FRACTURE OF A SMALL METATARSAL BONE—SUPPURATIVE SYNOVITIS.

By M. W. Trischler, D.V.S., House Surgeon.

The patient was a chestnut gelding about nine years of age, used for light road purposes.

History.—While being led out to the watering trough on the evening of the 2d of June he was kicked by another horse on the off hind leg, in the region of the hock; following the infliction of the injury no lameness whatever was manifested until several hours had elapsed. The precaution was taken to prevent the animal from lying down, and a cold water bandage applied during the night.

When seen the following morning a superficial abrasion was noticed upon the superior extremity of the metatarsus and upon its postero-external aspect; but very little swelling about the point and some local heat; lameness, however, was excessive, the animal simply resting lightly upon its toe; crepitation could not be determined. Diagnosis withheld; fracture suspected; the animal placed in slings and an opium and lead solution prescribed.

Upon the second day lameness was, if anything, slightly increased; the parts somewhat swollen and a deep-seated fluctuation detected at the point of the injury.

The day following, what was at first only a slight wound had become transformed into a track leading directly down upon the small metatarsal bone, with evidence of that most formidable of complications, an open joint, as shown by a slight escape of synovial fluid. The bone gave a grating sensation upon the introduction of the probe, and appeared also slightly movable.

From now on the severity of the symptoms continued to increase day by day; pain became constant and lancinating in character, the animal keeping the limb in constant motion; the hock became greatly swollen; heat manifested over its entire extent, the discharge of synovial fluid becoming mixed with pus of a sanious nature; appetite began gradually to fail, with rapid emaciation; temperature varying between 102° and 103°.

In view of the condition of the animal generally and the extent and character of the lesions locally, the owner finally consented to have him destroyed, which was accordingly done on the 19th of June.

Autopsy revealed a general synovitis of the entire hock, the membrane being greatly thickened, the sac distended with synovial fluid and a small quantity of pus. The connective tissue beneath the skin was infiltrated with serum and a plastic exudate which had become organized. The superior extremity of the external rudimentary metatarsal bone was fractured in a manner so as to form six or seven separate pieces of as many different sizes; they being held, however, in perfect apposition, the entire mass being surrounded by extravasated blood. The periosteum about the seat of the fracture was also concerned, in many places being an eighth of an inch in thickness.

There existed no evidence of any reparative calus directly at the seat of the fracture, but the superior extremity of the large metatarsal and the lower row of tarsal bones showed an abundance of osseous deposits.

NEW GROWTH OF A MELANOTIC TUMOR IN A BAY HORSE—AMPUTATION OF THE TAIL.

By G. A. Lathrop, D.V.S., House Surgeon.

A bay gelding, 15.1 hands, 18 years of age, was brought to the free clinic September 26th, 1887, suffering with a melanotic tumor of the tail, two and one-half inches in diameter. The owner was advised to have it extirpated, to which he consented. The tumor was removed and the patient discharged in a convalescing condition, with hopes at the time of a permanent recovery, but a guarded prognosis was given at the time and a report given of the same in the November number of the Review in 1887.

About seven months later, May 5th, 1888, the same horse was brought to the free clinic again by another party—he having changed owners in the meantime—to be treated for the same affection.

Upon examination, a large growth, 14 inches in circumference and 8 inches in diameter, situated at the same seat of the previous tumor, was found. There was also another small growth underneath the tail and nearer the base. Ulceration had taken place on the surface of the larger growth, rendering the case still more complicated, with less chance for a recovery, and as amputation of the tail was the only means by which a recovery might take place, an unfavorable prognosis was given; but the owner was advised to have it operated upon, to which he consented, and accordingly the horse was cast and an elastic bandage applied around the tail above the growth, to control the hemorrhage. The tail was then amputated two inches above the tumor, by a single incision, and the end of the stump severely cauterized by the actual cautery, to control the hemorrhage and also to destroy any melanotic growths that might be present.

Was seen again May 16th; wound was doing nicely; a large scab had formed, and very little suppuration was present.

Was seen again June 6th; scab had come off, wound was granulating nicely and of a very healthy nature; was cauterized slightly with chloride of zinc solution; has not been seen since.

What the result will be, time only will tell. It was feared at the time of the operation that another growth would make its appearance at the end of the stump, but no signs of such were apparent when last seen.

This case is not reported to simply describe the operation, for that in itself was very simple, but to show that we can never be too careful in our prognosis when about to operate upon growths of this nature.

EXPERIMENTAL PATHOLOGY.

THE BLOOD DESTROYS BACTERIAS.

BY FODOR.

The author injected cultures of anthrax bacterias into the jugular vein of a rabbit, and having killed the animal, used the blood from the heart in the preparation of other cultures. He obtained only negative results, as in about one minute the bacterias had already entirely disappeared from the blood.

He then placed the blood taken from the heart of a rabbit, immediately after death, in a large test tube, which he kept at a temperature of 38°, and added to it ten drops of an anthrax culture. Ten minutes later the tube contained a liquid which gave cultures extremely rich in bacterias; in thirty minutes the blood had already lost a portion of its properties, and after the lapse of an hour or two the cultures produced became poorer and poorer. On the contrary, gelatine, inoculated at the same time with the blood, and with the same anthrax bacilli, at the same temperature of 38°, preserved its power of reproduction uniformly for two hours.

The blood taken in a fresh state had thus destroyed, not indeed all the anthrax bacilli, but a large portion of them. This destructive power, however, has only a limited continuance, and if a lapse of eight days be allowed before the examination, the result will be the production of an enormous mass of bacilli and spores.

The destructive effect of fresh blood upon the anthrax bacilli is thus demonstrated to be an established property of that fluid.

No traces of the destroyed bacilli can be found in the elements of the blood, in either the red or the white corpuscles.—*Deutsch Med. Woch.*

OF THE POWER OF MICROBES TO ACCOMMODATE THEMSELVES TO ANTISEPTIC MEDIA.

By G. Kossiakoff.

The subjects of the experiments which produced the results which are here referred to, are the anthrax bacteridæ, the tyrothrix scaber, bacillus subtilis, and tyrothrix tenuis—the antiseptic media employed in the tests being solutions of borax, boracic acid and corrosive sublimate. The following conclusions are held to be justified:

Low organisms may be "acclimated" by exposure to the action of an antiseptic solution in doses gradually increased, and when thus acclimated they may acquire the faculty of living and growing in the same solution which in the absence of the process of acclimatization would prevent their development. But this power or faculty of resistance or accommodation varies in different micro-organisms.

The numbers stated as measuring the power of accommodation, and fixing the limit beyond which the growth of the microbes cannot be sustained, cannot be considered as fixing the maximum rule within the same conditions as those under which the experiments were originally made, since they do not prove that, in other conditions more favorable to their acclimatization, the micro-organisms might not be able to offer still more effectual resistance to the action of antiseptics.—*Annales de Pasteur.*

A NEW GASIFORM BACILLUS—A HUMAN PARASITE.

By Arloing.

The author has examined the reddish, sanious liquid, mixed with sundry gases, obtained through the puncture of a wounded eye. The patient seemed to be free from any general disturbance, and the enucleation of the eye was perfectly successful.

Arloing expected to find the bacillus septicus, but found only fine bacilli of varying dimensions, some being isolated and some in masses, without spores, and differing from the bacillus of gaseous septicæmia by its mode of development. Inoculation with the fluid obtained is fatal to rats and guinea-pigs, but is without effect on rabbits and dogs. Cultures in bouillon and gelatine are formed, both in the presence and the absence of air, and in its growth the bacillus assumes the form of little tufts. It does not produce the fermentation of albuminoids.—*Revue des Sciences Med.*

EXTRACTS FROM FOREIGN JOURNALS.

APOPLECTIC CEREBRAL SHOCK IN A HORSE. RUPTURE OF THE RACHIDIAN BULB.

By M. L. Magnin.

A clinical lecture by Director Nocard, published as long ago as 1882, being almost the only recorded notice or accessible publication on this subject, the author has thought that the following further mention would be found to contain some points of more or less interest to the veterinarian reader.

A nervous horse, being quite severely punished while at work, broke loose and ran away, and after a run of about two hundred yards fell headlong, striking heavily against a wall, death being instantaneous. He was found lying in the left sterno-costal position, his legs bent under his body, and his head bend under the neck.

At the post mortem there were a few ecchymotic spots, principally on the left side. The external occipital protuberance on the left was loosened from the principal part of the body, but that was the only bony lesion found. No fracture could be detected. The encephalic mass was then carefully removed. The meninges were perfect, and there were no congestions, either externally or internally. Neither the cerebrum or the cerebellum offered anything peculiar.

The isthmus at first seemed normal, but careful examination of the bulb exposed serious lesions at the superior face of the organ. On the antero-posterior median plane of the right certiform body, more outward than inward, there was a longitudinal laceration, beginning about the level of the calamus scriptorius and running slightly upwards, involving almost half the thickness of the bulb. The edges of the laceration were separated by a clot of blood ; they were ragged and ecchymotic, and united at one point by a bridge or small band of nervous substance.

A similar lesion existed on the left corpora rectiforma, but was less extensive, and not so complete. It formed a small cavity and was filled with blood. It was situated nearer the inferior than the superior face.—*Rec. of Med. Vet.*

HEMORRHAGIC DIATHESIS IN THE HORSE.

By 'M. J. P. Thomassen.

After a short consideration of the etiology of hemorrhages, which he divides into *essential* and *secondary*, and a glance at the subdivision into *congenital* and *hereditary*, as admitted by authors, the writer refers to a few cases mentioned by Siedamgrotzky, Khone, Dieckerhoff, Frohner and others, and reports the following peculiar case, as one analogous to the " morbus maculosus Werlhofic," a human affection characterized by *interstitial* hemorrhages.

The subject of this report was a mare, eight years of age, which had recently had three attacks of epistaxis, and though she had lost but little blood had become weak and dull, and perspired readily. Her functions were all normal and she did not seem to suffer from severe sickness. Her looks were bright, her hairs glossy, and her condition satisfactory. The visible mucous membrane was pale and anæmic. No cause for the nasal hemorrhage could be found in the respiratory apparatus. Her temperature was normal, but respiration somewhat accelerated. The pulse was small, weak and rapid. Auscultation revealed above, in both sides, increased respiratory murmur, and below, loss of vesicular sound. Percussion showed complete dullness horizontally, as high as on a level with the scapulo-humeral joint. There was evidently a great mass of liquid in the chest. Examination of the heart revealed nothing. Thoracentesis was performed, and was followed by the escape of three or four quarts of a dirty, red colored fluid. Counted microscopically, the red globules and the leucocytes were found in the proportion of one to twenty. The urine was reddish. The diagnosis being incomplete, a treatment of symptoms was directed, consisting of stimulant and tonic ferruginous preparations.

After six days of this treatment the mare died. At the post mortem, on removing the skin, the dependent portion of the chest and abdomen were found to be filled with serous infiltration, the abdomen containing a small quantity of bloody liquid. A few petechiæ were found on the peritoneum, some of which were under the renal and hepatic capsules, and others on the intestinal mucous membrane. The adipose tissue of the left kidney contained a large clot of blood. The ovaries were very large and contained a bloody deposit. The thorax was nearly filled with a bloody liquid. The costal pleura was covered with petechiæ, the pulmonary portion containing bloody extravasations of various sizes. The pulmonary tissue contained hemorrhagic foci, and a certain amount of blood was found in the pericardium. The nasal mucous membrane under the dura mater in the cerebral substance contained small hemorrhagic spots. The cause of death was evidently anæmia, resulting from the repeated internal hemorrhagic attacks, and asphyxia, produced by the large bloody effusion in the pleura.—*Annales de Belgique.*

RABIES AND PSEUDO-RABIES IN THE DOG.

By Mr. F. Hendrickx.

The diagnosis of dumb-rabies being ordinarily determined by the presence of several symptoms, and sometimes even of one alone, (the paralysis of the lower jaw), which is common to several affections, it may easily happen that it is entirely erroneous, or at least of a very doubtful character.

A bitch had for three days presented some very peculiar symptoms. Her habits were quite changed and she became dull and quiet, and constantly lying down in her basket. Although ordinarily noisy and active, barking frequently, she had partially lost her voice, which easily failed. She chewed bones with difficulty, but still readily masticated soft food, and at a later period refused to drink. Previous to the appearance of these symptoms she had been covered, but without results, and yet, nine weeks later, her mammæ became large and full of milk, and she nursed and raised a puppy taken from the litter of another bitch. Her mouth, however, soon became paralyzed and her tongue pendent. Placed under observation, in consequences of a suspicion of dumb rabies, it was then that these symptoms were noted. She was somewhat constipated; made no attempts to tear or to bite, and remained indifferent to the presence of other dogs. Nothing appeared from a careful examination of the mouth and throat that served to explain the existing conditions. She remained in that state for four days, when she seemed to improve. She recovered her good spirits and began to drink and to take notice. She again recognized her master, and after a few days was sent home in perfect health.

Now comes the interesting question, what was the true nature of this paralysis of the jaw; was it rabies, and did the animal recover, or was it some anomalous affection of unknown nature, which gave rise to these pseudo-rabiform symptoms, as they are commonly met with ?—*Ibid.*

SYMPTOMATIC PECULIARITIES IN A CASE OF RABIES, DEVELOPED BY INTRA-CRANIAN INOCULATION.

By the Same.

The body of a dog, destroyed because of suspicion of rabies, was submitted to the author for confirmation of diagnosis. The animal had manifested symptoms of an alarming and suspicious character, had bitten several dogs, and torn and eaten the boards of his kennel. On the post-mortem no special lesion was found, except a certain quantity of foreign bodies in the stomach, and although the history of the case and the lesions discovered might have justified a positive diagnosis of rabies, inoculation of another day was decided upon to confirm the fact. A street dog was trephined, and about one-third of a syringe of Pravaz filled with a filtered solution of a portion of the rachidian bulb of the suspected animal in some distilled water, was introduced under the dura mater. The operation seemed to disturb him but little, and the wound healed in a few days.

Instead of showing any bad symptoms between the twelfth and sixteen days, as it is usually the case in this experiment, it was not until the twentieth that he appeared to be sick. He then refused his food, and for the three following days showed all the symptoms of rabies, being in state of continued agitation, moving constantly about his kennel, tearing his bedding and biting the sides of his cage. His looks and his voice were altered, and he bit furiously at a piece of stick presented to him; it was, in fact, rabies, which it was expected would kill him on or about the fifth day, the fatal termination in rabies generally taking place between the first day and the eighth from the manifestation of the first symptom. This dog, on the fifth day was better, his symptoms having improved, and his nervous irritation diminished, and in about five days more he was apparently so completely recovered that his radical return to health was confidently looked for when, to the surprise of all, he was a couple of days after found dead. Unfortunately, no post-mortem examination was made. If this dog died from rabies, two important points are to be observed in connection with the experiment. These are, the duration of the incubation of the disease thus inoculated, and the other is the length of time that elapsed before death took place.—*Ibid.*

FATAL PERITONITIS FOLLOWING THE ACCOUPLEMENT IN A COW.

By M. Duranton.

The act of copulation in cattle varies in some respects from that of other mammalia, because of the possibility of the introduction of the organ of the male directly into the uterus. In this case this peculiar accident took place, and the violent action of the male caused a laceration of the left horn of the uterus. Several days after she had been served, this cow became sick, and exhibited a series of symptoms which brought the author to the conclusion that she was suffering with acute peritonitis. She was sold to the butcher and destroyed, and besides an extensive and general inflammation of the peritoneum, with a bloody effusion in its cavity, the injury of the left horn of the uterus was exposed, partly closed by a large clot of blood.—*Journal of Zoötechnie.*

PARAPLEGIA IN THE HORSE.

By Mr. Ripert.

Any form of treatment that is followed by good results is comparatively justifiable, and the novelty of an application may sometimes form its best recommendation to a trial. This is partly demonstrated by the history of the following case, in which an attack of paraplegia gave way in a very short time to the hydrotherapic treatment of cold douches. A four-year-old horse was taken suddenly while at work with loss of power of the hinder extremities. The amputation of the tail, which produced a general bleeding, with stimulating drenches, purgatives, injections and strong frictions, all failed to give relief. Fearing a fatal result, the author then had recourse to the application of cold water douches over the loins, and in fifteen minutes there was a well-marked return of sensibility to the parts. This, after drying the skin with brisk friction, was followed by a subcutaneous injection of a solution of strychnia, and in *three minutes* the animal rose to his feet and micturated a *viscous, strongly odorous and bloody urine*, and from that moment was entirely relieved.—*Ibid.*

[Was this a true case of paraplegia ?—Ed.]

TREATMENT OF SEPTIC METRITIS BY UTERINE IRRIGATIONS.

By the Same.

"In mares and bitches, the putrefaction of the after-birth is followed rapidly by puerperal septicemia, but in cows it gives rise only to a simple septic fever, which disappears upon the removal of the offending substance from the uterus. If, however, that organ is torn or injured, rachitis and septicemia soon appear."

Upon this theory, that puerperal metro-peritonitis is always of septic origin, the author recommends the irrigations patronized by Franck and Haubner.

The injections are made with a long irrigator, introduced into the uterus, and between twenty-five and thirty quarts of water are allowed to wash the whole cavity. The irrigations are made at least once, and if the putrefaction is extensive, twice a day, the condition of the vaginal discharge, the temperature and general condition of the patient, furnishing, in fact, the indications to be carried into effect.

The solution employed in preference is that of corrosive sublimate, 1 part in 1,000. A sufficient number of observations have proved this to be a perfectly harmless formula and one that can be used without fear of mercurial poisoning. Besides its septic effect, the solution has a property of stimulating the contraction of the uterus, and thus facilitating the expulsion of the putrid elements.

CONTRIBUTION TO THE TREATMENT OF TETANUS.

By M. A. Trinchera.

After mentioning all the recent works which have established the infectious origin of tetanus and considered the poor results obtained by many of the various treatments recommended, the author mentions the experiments he has made in the line of treatment and suggests the use of salicylate of quinine, in tracheal injections. The formula is:

Salicylate of quinine,	6 parts.
Salicylic acid,	3 "
Distilled water,	
Absolute alcohol, aa.	75 "

This is a dose for one tracheal injection, made in the evening. The treatment can be followed during five or ten days. A rapid recovery was obtained in two cases of traumatic and one of chronic tetanus.—*Clinica Veterinaria.*

THE CAUSE OF DISLOCATION OF THE PATELLA.

By M. V. Lari.

That this condition is due to the fact that the patella is caught on the superior extremity of the femoral trochlea, has been proved long ago by Italian and French observers. The author had remarked that in the dislocation, the patella was often carried upwards and slightly inwards. To satisfy himself of the changes that might exist, he experimented on cadavers. Artificially he produced the dislocation upon three horses, and then dissected the leg. In all the cases he found that the femoro-tibial joint was in extreme extension, the patella was carried upwards but not inwards, and tightly bound to the femoral trochlea. The internal and middle patellar ligaments were in full stretch, and the patella caught by the superior extremity of the trochlea on its inner border.

The post-mortem of a mule affected with an old luxation revealed the same alterations.—*L'Ercolani.*

COMMENCEMENT EXERCISES.

PENNSYLVANIA UNIVERSITY VETERINARY DEPARTMENT.

The one hundred and thirty-second commencement of the University of Pennsylvania and the second of the Veterinary Department were held at the Academy of Music in Philadelphia on the 6th of June ult. The degree of "Veterinariæ Medicinæ Doctor" (V. M. D.) was granted to the following gentlemen. The class matriculated twenty-eight names at the opening of the session in 1885, and was augmented later by two members of the preceding class:

Bachman, B. Frank	Pennsylvania.
Balzer, Helmuth C.	Connecticut.
Breisacher, L. W., Jr.	Michigan.
Felton, Howard B.	Pennsylvania.
Formad, Robert	Pennsylvania.
Garrett, Caspar	Pennsylvania.
Hartman, Guldin R.	Pennsylvania.

Lusson, Louis O.	Pennsylvania.
Maurise, Antoni	Pennsylvania.
Reefer, Leon R.	Pennsylvania.
Ridge, Wm. H.	Pennsylvania.
Schreeber, Albert F.	Pennsylvania.
Tintsman, John Z.	Pennsylvania.
Werntz, William B.	Pennsylvania.

NEWS AND SUNDRIES.

A Cure for Roaring in Horses.—The announcement has been made of the discovery by the celebrated English veterinarian, Dr. Fleming, of a mode of curing the vice of roaring in the horse by an operation upon the larynx. A number of cases are reported, though we have not as yet received a circumstantial account of them. The *Live Stock Journal* (London) refers to them in a manner which implies a favorable opinion of the success of the method, but thinks it would be premature to pronounce absolutely at this time.

Dr. Fleming himself, in a note to the *Journal*, speaks on this wise :

" Yesterday (June 4th) the veterinary surgeon at Woolwich who is in charge of the cases, reported that the horse operated on at the same time as the one already announced as cured, was perfectly well. The animal had been galloped for a long time and made no noise, neither did it exhibit the least distress. Both the cases were so bad that they could not go many yards without making a startling noise and stopping for want of breath. A third horse was operated on a week ago, but we have not had it out of the stable yet. The operation gives promise of being successful, as, indeed, I predicted it would from my previous study of the disease—anatomically and pathologically. There is, unfortunately, ample scope for the operation, even among army horses, and we shall soon have a number under treatment. Then we will be able to arrive at a definite conclusion. For the present we can say that so far the operation has been a complete success, and in some other points it has yielded most important results from a surgical point of view.

Borofuchsin as a Stain for Tubercle Bacilli.—Professor Lubimoff describes in the *Meditsinskoe Obozrenie* a new stain for tubercle bacilli, which he calls borofuchsin. It consists of: Fuchsin, 0.5 gramme; boric acid, 0.5 gramme; absolute alcohol, 15 grammes; distilled water, 20 grammes. Prepared thus, it has a slightly acid reaction; it is quite clear and not liable to spoil by being kept, and is consequently always ready for use. The sputum is dried on a cover glass, and stained by being heated in contact with the borofuchsin for one or two minutes. The stain is then washed out by treatment with dilute sulphuric acid. The specimen is then washed with alcohol, and subsequently immersed for half a minute in a saturated alcoholic solution of methylene blue. After being washed in distilled water and dried, the examination of the specimen is made in oil of cedar or in a solution of Canada balsam. In exactly the same way sections of tuberculous organs may be stained after hardening in spirit, only in such cases the steps of the operation must be somewhat more prolonged. The main difference between this and other staining processes for Koch's bacilli is that, when borofuchsin is used, the process of washing it out with sulphuric acid is an almost instantaneous one. All other bacilli are, as when other stains are used, rendered colorless and invisible, the tubercle bacilli being alone seen.—*Lancet.*

Dr. Frank S. Billings and His Work.—It is stated that Dr. Billings, the accomplished head of the patho-biological laboratory of the State University of Nebraska, has found it necessary to relinquish his labors in that institution, by reason of the insufficiency of the means at his disposal for profitably and properly carrying forward the enterprise. Not only has there been a lack of means to meet necessary expenses, but ceaseless interferences with his work are alleged, such as must always prove most irksome and discouraging to a sensitive and zealous investigator. The practical study by clinical methods of the diseases of our live stock is an undertaking that will well reward any expenditure likely to be incurred in its prosecution, and that should command co-operation and countenance on every hand, as of large interest to the entire community.

One result of this miscarriage is to leave Dr. Billings at liberty to accept an invitation from any institution or station, or other parties interested or engaged in investigating pathological subjects of the nature in question, and we need not say that we would be truly gratified to learn that the Doctor had found the place and the place had found the man for the full, satisfactory, uninterrupted and successful prosecution of the experiments and discoveries hitherto pursued by him.

AMERICAN VETERINARY REVIEW,

SEPTEMBER, 1888.

EDITORIAL.

First International Congress on Tuberculosis.—Initiated by a veterinarian, it is organized by Prof. Verneuil—its importance—gathering of scientists, comparative pathologists, physicians and veterinarians—almost all Europe represented—even the United States—veterinarians for the first time are admitted to equal rights—admission made by Prof. Verneuil—Chauveau is the President of of the Congress—a compliment to the profession he represents as well as to the scientists—veterinarians of France can realize the advantages of this recognition —thanks to the veterinary profession by Prof. Verneuil—the reports of the Congress will be published later on. Surgical Interference in Laryngeal Paralysis Producing Roaring.—A tedious affection that no one cares to encounter—difficulties of positive pathology—principally laryngeal, however—Gunther's attempt for its relief—publication in the *Veterinary Journal* of July—four operations indicated—they are simple—all are preceded by one for the opening oi the larynx—this is of great value—assisting in a positive pathological diagnosis—it is harmless—the larynx is no more *terra incognita*. Antirabic Inoculation of Herbivorous Animals.—Pasteur's investigations followed by others—Prof. Galtier, of the Lyons school, one of the first—his labors and achievements cannot be ignored—Pasteur's treatment objectionable and difficult to the ordinary practitioner—intra-venous injection is simple—and as certain—the experiments of Galtier confirmed at the Pasteur Institute—all veterinarians ought to try it—good results obtained—it will protect all ruminants—perhaps the horse—experiments to be made. Our Prize.—We are prepared to fulfil our engagements—let the committee report.—Special Back Numbers.

First International Congress on Tuberculosis.—The first international congress organized for the discussion of the subject of tuberculosis was held near the close of last month, as had been previously announced in the Review. The meeting was organized upon the initiative suggestion of a veterinarian, Mr. Butel, by Dr. Verneuil, and was held in Paris from the 25th to the 31st of last month; and although, or perhaps because, it was the first gathering of the kind, it proved to be an occasion of great interest, and accomplished an apparently decided success. Many points of special importance and widespread general concern were adduced and discussed, and valuable conclusions were in many instances established. We hope to be able, in our next number, to lay before our readers some of the more important and interesting of the papers which were presented and considered.

The importance of the objects contemplated and the work accomplished by this congress may perhaps be somewhat accurately estimated by a consideration of the extent of the territory and the number of the nationalities represented by the participating members. Thus, all the faculties of medicine throughout France, together with numerous other of the scientific organizations of that Republic, may be cited as among its constituents; and with these were associated, in close co-operation, kindred savans from the academies of medicine of New York, and such diverse and distant municipalities as Turin, Bucharest, Granada, Madrid and Athens, with medical societies from England, Denmark, Italy, Belgium, Holland, Switzerland, and still other lands. And what is most notable of all—for the indication which it offers of the advent of an era of good feeling and practical scientific good sense—it was not alone the practitioners in human medicine who were active in engineering the working of the congress, but the kindred branch, the veterinary sister, was for the first time admitted to an equal seat and voice in the deliberations of the assemblage. And this is a noticeable fact, truly, albeit the occasion was inaugurated for the express purpose of elucidating all attainable truth in respect to a disease and its treatment which is of equal interest, and so recognized on every hand, to all the varied families of sufferers from its mortal ravages, whether amongst human, bovine or other victims.

This was indeed, for us, *the* circumstance of the congress, and though it was only rendering due honor to the claims of veterinary medicine, it was an event worthy of being noted in our professional annals. The three veterinary schools of France, with nearly all the French veterinary societies, and the veterinary colleges of Budapest, Glasgow, Bruxelles, Utrecht, and even veterinarians from the United States, were counted amongst the adherent members of this grand reunion of comparative pathologists—a fact so neatly and appropriately acknowledged by Prof. Verneuil in the following words, which we quote from his discourse of inauguration. Said Dr. V.:

"Comparative pathology, then, is a common field which you have seen cultivated in the last few years with so much talent by Bouley and Vulpian, and however it is to-day, certainly, the first time, that physicians and veterinarians come together, no longer separately but in large cohorts, to unite their efforts in studying one of the too common affections which has the fatal power to decimate as well man and his servants and to transmit itself without mercy from one to the other."

While waiting the receipt of the various papers which we are expecting from the seat of the congress, we may improve the occasion by responding to the Doctor and indulging in our own expressions of gratification that at length veterinarians and medical men have combined their forces with a mutual purpose on a common battle-field, and that we may now safely anticipate in our own land the recognition and position we may justly claim.

The nomination of Professor Chauveau, the eminent physiologist and anatomist, to the presidency of the organization, is not a specially remarkable circumstance, but may be accounted to be a simple, well-merited honor, due to the man and scientist. But the choice of Professor Chauveau, the VETERINARIAN, the Inspector of French Veterinary Schools, to the post of honor should be proudly acknowledged for the compliment which it involves for the entire veterinary fraternity, albeit the selection might well be wholly due, at another time, to the personality of the man himself, without reference to accessory circumstances.

The veterinary fraternity in France are especially entitled to congratulate themselves upon this recognition of one who so fitly and well represents their standing and character.

That the events now recorded are the natural and incidental evidence of the fact that the service which it is in the power of the veterinarian to render in the elucidation of questions pertaining to the domain of comparative pathology are now thoroughly appreciated, becomes further evident from the language of Dr. Verneuil, when he says:

"Let us who are professors and members of this faculty thank the veterinarians for their happy initiative and the warm desire they have exhibited in coming among us."

If to the numerous objects for which our medical conventions are usually called—such as that of stimulating new investigations and prosecuting pending researches, or settling questions of occasional professional interest—is to be added that of awakening a drowsy public from their slumbers, and of dissipating the fancies of dreamy specialists, there can be no doubt that the first international congress for the discussion of tuberculosis has fully succeeded in its purpose, though only an incidental one, as the minutes of its transactions, soon to be printed, will doubtless show.

Surgical Interference in Laryngeal Paralysis Producing Roaring.—The intractability to treatment which characterizes the evil of chronic roaring renders it a serious annoyance to many practitioners who are called upon for its treatment; and adding to this circumstance its liability to involve the owners of the affected animals in financial loss, it obviously constitutes an affection which not many persons, either veterinarians or owners, are over-anxious to encounter. In its treatment mere palliative results are usually the best that can be attained, and even these are not always sure of accomplishment. The various pathological changes which give rise to the peculiar symptoms of noisy respiration, and at times of threatened suffocation, are not always of easy and positive detection, and even the question of their location, and whether they are specially to be looked for in the laryngeal space, or only affect the organ thus situated by abnormal action, remains one which as yet involves a degree of uncertainty to which many errors of diagnosis are to be attributed. In other words, it cannot always be determined whether the trouble is located in the larynx or should be looked for elsewhere in the respiratory apparatus.

It is still true, however, and it has been proven by the results of many post mortem examinations, that the diagnosis of chronic roaring which refers the symptoms to an affection of the larynx resulting from a diseased condition of the left laryngeal nerve, and hence of all the tissues through which it is distributed, will in a majority of cases prove to be correct.

Gunther claims that out of one hundred roarers this lesion is present in ninety-six cases, though this is by many considered to be an exaggerated estimate. In view of the frequent occurrence of this disease, and with the knowledge we possess of the physiological and pathological phenomena with which we are familiar, viz., the paralysis of those laryngeal muscles, it is a somewhat surprising fact that the therapeutics of this affection should have been so nearly overlooked as has been the case until recently. In fact, with the exception of some accounts of Gunther, Jr., who some fifty years ago, we believe, cured roarers by the entire or partial removal of the arytenoid cartilage through the tracheal opening, or by the division or even the removal of one of the vocal cords, there is in veterinary literature but little of value on the subject.

Professor Frederick Smith has done well, then, in favoring the profession as he has done in his paper in the *Veterinary Journal* for July, with his views in relation to the various modes of operating for the relief of roaring, especially as, after all, there is much comparative simplicity in all of them, and, we believe, no difficulty of a very serious character to be encountered in any. These operations for the removal of the noise caused by laryngeal paralysis, as mentioned by Professor Smith, are four in number, and comprise: 1st. Excision of the left vocal cord; 2d. Partial excision of the arytenoid cartilage, together with the removal of the left vocal cord; 3d. Opening of the crico arytenoid articulation and production of anchylosis; and 4th. Excision of the inferior face of the larynx, with removal of the muscles and portion of the cricoid cartilage, or permanent laryngo-tracheotomy. The mode of entering the larynx is simple, but is not without its importance, since whatever may be the subsequent steps of the operation, this opening of the larynx must answer for all. When the animal is cast he must be placed well on his back, with the limbs perfectly vertical, "(*) the head extended and the whole laryngeal region perfectly exposed. The hair having been clipped closely, the finger endeavors to feel for the cricoid cartilage or crico-thyroid ligament. This is a very difficult matter in animals which have the sterno thyroid muscle well developed; but if the head be slightly raised and the neck made less tense, the parts may perhaps be defined. As a surgical landmark, take the parotid edge of the inferior maxilla; a line drawn along this to the larynx is just opposite the crico thyroid ligament; fix and steady the part, and make a longitudinal incision through the skin exactly in the central line, and carry it as far as two inches. Next make an incision in the sterno thyroid muscle, tearing—rather than cutting—its fibres so as to avoid hemorrhage as much as possible. Observe that the incision in this muscle corresponds in size to that made in the skin. Some tissue, including fat, will now be felt covering the face of the larynx. The finger should carefully examine the part, making out well crico thyroid ligament, the cricoid cartilage and the crico tracheal ligament in turn; clear all the tissue away until the above ligaments and cartilage are exposed, but on no account open the larynx until all the hemorrhage has stopped (tying or twisting small spirting vessels, with this object); for blood passing into the larynx is very obstructive to further work. The larynx is now opened by a longitudinal incision, extending from the thyroid cartilage to the trachea and the wound held apart by retractors."

This preliminary step is of the greatest importance, as it permits a positive diagnosis, by which it can be determined whether the roaring of the patient is due to *laryngeal paralysis* and amenable to treatment. A number of patients are reported to have been relieved by this operation in England, and it will not be long on this side of the Atlantic, where the disease is quite common, before it is submitted to trial. But whatever may be the result as respects the roaring, a new field will have been discovered for veterinary surgery; and in the words of Fleming, "it is now well

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(*) *Veterinary Journal*, July, 1888.

established that the interior of the living horse's larynx need no longer be regarded as a *terra incognita* to the veterinary surgeon, nor remain exempt from operative treatment."

ANTIRABIC INOCULATION OF HERBIVOROUS ANIMALS.—Since the investigations and discoveries instituted by Pasteur in reference to hydrophobia, and the treatment initiated by him and his co-laborers in cases of persons exposed to that disease, by inoculation through the bites of rabid animals, numerous other investigators have entered the same field of observation and research. But among all the students of this peculiar disease not one, probably, has reached more striking and valuable results than Professor Galtier, of the Lyons Veterinary School in France. Personally we are strong believers in the results obtained by the Pasteur treatment of threatening or impending rabies, but it is not the less incumbent on us, as veterinarians, to acknowledge our conviction of the value of the work realized by Professor Galtier. We believe that his labors and achievements possess a character and contain a promise of developments of a magnitude and interest entirely too great to be overlooked or depreciated.

We refer especially now to the application of a simple and successful form of treatment in cases of wounds inflicted by rabid upon other and healthy animals. The point is of special interest in respect to this class of victims from the fact that the results of the inoculation are more likely to be fatal than in the case of the human subject, who, when bitten, possesses the power which the dumb victim lacks, of giving due information of the calamity which has overtaken him.

It is true that Pasteur has given impunity to dogs in similar cases, and it is upon his method of treatment that dependence has been placed for the prophylactic effects which have been so widely beneficial. But there are difficulties attending the application of the Pasteur method of treatment which form serious obstacles to its application, and almost or quite preclude its availability in the ordinary practice of the country veterinarian, and especially in those sections of the country where large herds or flocks of animals are found. Cattle and sheep are favorite and common objects of attack by rabid dogs, and the instances are not rare of the infliction of widespread loss by the destruction of valuable animals following the uncontrolled and promiscuous assault upon his fellow quadrupeds by a stray hydrophobic canine.

A simple form of treatment as a prophylactic measure is proposed by Professor Galtier in the intra-venous inoculation of a small quantity—from 1 to 1½ cubic centimetres—of a pure solution of rabid virus. This discovery of the Professor was published in the "Comptes Rendus of the Academy of Sciences in Paris," in 1881, but it failed to receive the attention it deserved. It seems to have been condemned on scientific grounds as in some way unreliable, by reason of some errors of manipulation in the reported experiments.

Since that period, however, a change of sentiment has occurred. More attention has been bestowed on methods and greater caution exercised in respect to details, with the effect of securing assured and uniform results—some of the eminent men connected with the Pasteur Institute being among the investigators—and to-day the *prophylaxy of rabid wounds, at least in the larger and smaller ruminants, by intra-venous injection, is a fact established and accepted.*

As such an operation not only does not communicate hydrophobia to these animals, but on the contrary gives them immunity from the disease, the application of this harmless operation in places where large numbers of animals might be exposed could not be considered a wise measure, even when no wound had been inflicted, and as a preventive means, of the nature of a vaccination, it is a question which it is scarcely the time or yet in order to consider. But as to its application when wounds have already been received, it can no longer be ignored or avoided by the veterinarian. As its efficacy survives for at least a period of twenty-four hours after the inoculation, there is nearly always sufficient time for the necessary preparation.

The treatment is simple. It consists in the direct introduction, by means of the Pravat syringe, of from 1 to 1½, and even 2 cubic centimetres of a solution of pure rabid virus, made with sterilized liquid and a piece of the rachidian bulb of a rabid animal. The injection is made in the jugular vein, and is repeated at intervals of from four or five to twenty-four hours. No bad results have yet been observed, and the toxic symptoms said to have been detected by Galtier after injections of large quantities of the virus, are denied by Nocard and Roux on the strength of their own experiments.

These last named gentlemen report similar results obtained in experimenting with a horse which had been bitten in the nose. He was treated with 1.30 c.c. of virus, in five injections, administered at intervals of two days, and remained healthy seventy days later. This experiment is well worth repeating and retesting, and if successful it would place in our hands a control over the remainder of our domestic animals such as we have already acquired over the herbivorous.

OUR PRIZE.—The time has now arrived, we believe, for the fulfillment of the conditions assumed by the staff of the REVIEW in their proffer of a prize for the successful competitor for such a literary and professional distinction. We received two papers, and they were duly published in the May and June numbers of the present volume, and it remains now for the committee of award to notify us of their verdict. Professor R. Huidekoper as chairman, Dr. J. C. Myers, Sr., A. A. Holcombe, L. Howard and D. J. Dixon form that committee, and we are pleased now to remind them of what remains for them to do. We shall of course look to Prof. Huidekoper for the decision, which will appear in the REVIEW as soon as we are notified of it.

SPECIAL—BACK NUMBERS.—One of our subscribers, desiring to make his ninth volume of the REVIEW complete, is lacking the numbers for July, 1885, and January and February, 1886. If any of our readers have these numbers on file, and can spare them, this subscriber will thank them very much if they will forward them to the office of the REVIEW, at our expense.

ORIGINAL ARTICLES.

THERAPEUTIC PROGRESS.

SOME RECENT OBSERVATIONS UPON, AND EXPERIMENTS WITH, IMPORTANT VETERINARY REMEDIES.

Reviewed by Roscoe R. Bell, D.V.S., Brooklyn.

THE PHYSIOLOGICAL ACTION AND THERAPEUTICAL USES OF ESERINE IN THE HORSE.

In an interesting article contributed to the April number of the *Veterinary Journal* by Prof. Fred. Smith, of the English Army Veterinary School at Aldershot, the writer gives the results of many experiments made by himself and assistant, Professor Chas. Rutherford, with this powerful drug. Considering the length of time which it usually takes to produce catharsis in horses, and the very many instances in which an immediate action is of vital importance, these tests cannot fail to be of great practical value to veterinarians everywhere.

He says the drug is derived from the physostigma venenosum, or Calabar bean, which is indigenous to Western Africa. It contains two alkaloids—eserine or physostigmine and calabarine. The two alkaloids possess different properties: physostigmine or eserine contracts the pupil when applied locally to the eye, causes contraction of voluntary and involuntary muscles, and in large doses produces paralysis of respiration; while calabarine produces symptoms of tetanus, closely allied to those brought on by strychnia. The preparations of eserine which Smith employed were the sulphate, salycilate, and the latter combined with pilocarpine. The sulphate appeared to produce more colicy pains than the salycilate, while the latter, combined with pilocarpine, was more efficient and required a smaller dose. The dose depends upon the size of the horse and the manner of administration. He injected it both hypodermically and intratrachically, and prefers the latter method, giving the following advantages: It causes less pain than when injected beneath the skin; it is more rapidly absorbed; it acts more quickly; and there is less chance of loss of the fluid if the head be elevated for two or three minutes after injecting into the trachea, so as to prevent the solution dribbling back through the nostrils. For a medium-sized horse the dose may be regarded as one and a half grains, while two grains will answer for the largest animals; both of these doses should be combined with three grains of pilocarpine. Smaller doses (as one grain of eserine) will in the majority of cases prove useless. Eserine is soluble with difficulty in water, and for the required dose six or eight drachms of distilled water will be necessary. The amount of fluid which may be injected into the trachea without any evil effects is therefore considerable, and it is very quickly absorbed from the delicate mucous surface, while if subcutaneously administered there is always great loss of fluid where so much is necessary. The solution of the drug is facilitated by using warm water, the small tabloid being placed in a two-ounce ointment pot or other suitable vessel, a little water added, the tabloid crushed with a small glass rod or other instrument, more water being added, with continuous stirring, until the whole is dissolved.

When the drug is introduced beneath the skin we may expect it to act in about forty to sixty minutes. When intratrachially injected, the action may commence in twenty to twenty-five minutes; it is rarely delayed beyond an hour, while beneath the skin it has remained for an hour and a half before manifestations of its action were noticed.

The physiological action of eserine alone is described as follows: "The earliest indications we have of the action of the drug are loud intestinal murmurs, passage of flatus, with slight colicy pain; shortly this is followed by evacuation of the contents of the rectum, and the motions then pass at intervals of a few minutes, each becoming gradually softer, more watery, less formed in balls, until we reach the stage when the evacuations are moist and fluid, exactly representing cow's fæces. All this time the abdominal disturbance has become greater, the animal lies down, but seldom rolls, the intestinal murmurs are louder, the passage of flatus almost continuous, straining marked, fæces are voided with great rapidity, often ejected with force, and several ounces of a brown colored fluid will at this time accompany each motion. About two to two and a half hours from the time of injection the effects are commencing to pass off, and during this short time an almost incredible amount of fæces will have been excreted. Details on this point will be given below. Those who have had no previous experience of the drug and the results obtained will regard it as magical and marvelous."

From this it would appear that in eserine we have a drug of the highest value in the treatment of intestinal obstruction, and even though the condition be that of intusussception or valvulus, the violent peristalsis would have more of a tendency to overcome the accident than anything possibly in the pharmacopœia. More especially is it of value since we possess nothing whereby the evacuation of the bowels can be accomplished in less than twenty-four hours, and in many of our cases every hour's delay is an element of the most serious danger.

The symptoms produced when pilocarpine is combined with eserine, in addition to those detailed as being produced by eserine alone, are salivation of more or less intensity, and increased intestinal peristalsis, with no increase of pain. Salivation is sometimes extreme, and usually commences in three to five minutes after administration; the secretion pours from the mouth, the horse is constantly slobbering and moving the tongue, and large quantities of saliva are swallowed. This salivation need not cause alarm, as it is the physiological action of the pilocarpine. The quantity of saliva swallowed and the stimulation of the pancreatic secretion may in the intestinal canal act most usefully, both mechanically and chemically.

A point of great importance is that eserine may be administered even after other purgatives have been given, without destroying or increasing the action of either.

Prof. Smith concludes that the action of eserine on the intestinal canal of the horse is due (1) to an increase of the peristaltic action caused by the influence of the drug on involuntary muscular fibres, and (2) to an increase in the fluids secreted from the mucous membrane of the intestines.

The experimenter appends to his article some observations obtained from its practical use, which will pretty clearly demonstrate its value and indications:

A horse received 1½ grains of eserine subcutaneously; it acted in twenty-five minutes, and produced in the first hour seven evacuations, in the second hour seven, the effects passing off in two hours and ten minutes.

A horse received 1½ grains of eserine hypodermically, which took twelve minutes to act, producing seven evacuations in the first hour, and then terminating.

Another horse received 1½ grains of salycilate of eserine hypodermically, producing a free action of the bowels in one hour. This case terminated fatally from ruptured stomach, and thus it was demonstrated that eserine could act upon the large intestines in spite of the shock to the abdominal nervous system which a ruptured stomach causes.

A pony received 1 grain of eserine hypodermically; three evacuations were produced in fifty minutes, and in eighty minutes from the time of injection eight evacuations had occurred. The case was a fatal one, the cause of obstruction being due to a small diaphragmatic hernia. Had the gut not been nipped so tightly, there is reason to believe the increased peristalsis might have withdrawn it.

A horse received a few drops of a solution of eserine into the conjunctival sac; it shortly produced contraction of the pupil, which lasted fully two days.

A horse received 1½ grains of eserine by injection into the trachea; it took seventeen minutes to act, and produced in the first hour twelve evacuations, weighing 11 lbs., 13 oz., and a considerable quantity of flatus. The action then passed off.

A horse received 1 grain of eserine hypodermically; it took forty-two minutes to act, and produced only one evacuation in one hour, accompanied by a considerable quantity of flatus.

The same horse received 1 grain of eserine and 3 grains of pilocarpine by injection into the trachea; it took twenty-one minutes to act. In the first hour, counting from time of injection, it produced fourteen evacuations, weighing 30 lbs., 6 oz.; in the second four evacuations, weighing 7 lbs., 6½ oz., and in the third hour two evacuations, weighing 2 lbs., 13½ oz.,—in three hours a total of 40 lbs., 10 oz. of egesta.

In comparing these two cases the value of pilocarpine in addition to eserine is clearly demonstrated.

A horse received 1½ grains of eserine by the trachea ; it acted in forty-one minutes, and produced in the hour five evacuations, and during the second hour four evacuations. The weight was unfortunately not obtained, but the quantity of egesta completely filled a stable bucket. The case was one of most obstinate constipation, and had received six drachms of aloes previously, which ultimately acted at the expiration of the usual time.

Another horse received 1 grain of eserine with 3 grains of pilocarpine by the trachea, which acted in one and a half hours, producing in two hours and a half from the time of injection eight evacuations, weighing 26 lbs., exclusive of loss. The pilocarpine produced its salivating effects in four minutes from the time of injection.

A horse received by the trachea 2 grains of eserine and 3 grains of pilocarpine, the case being an exceptional one of intestinal obstruction. The drug acted in twenty minutes, there being twenty-one evacuations in one and a half hours, which were accompanied by the most intense straining we have ever yet witnessed from eserine. The relief to the intestinal pain was considerable, and in a short time it entirely ceased. The case terminated fatally a fortnight later, when a disorganized condition of intestine was discovered, such as no drug could ever have beneficially affected.

In reference to its action upon the pulse, respiration and temperature, but few observations were had. If anything, the pulse became fuller under its use. The respirations are generally increased, but this is undoubtedly due to the amount of abdominal disturbance present. In one case the temperature fell after evacuation of the bowels, but the records are meagre on this point.

RESUME OF SOME OBSERVATIONS ON ANTIPYRIN.

Kaufmann has been experimenting in the use of this drug, both as given through the stomach and when injected subcutaneously, his subjects being dogs and horses, and as this great febrifuge has been more or less used—and with varying success—by almost every veterinarian, I will give you the deductions made by this able observer:

He finds that by whatever avenue antipyrin enters the system it produces irritation of the gastro-intestinal mucous membrane. In large doses given by the mouth it often, though not invariably, causes nausea and vomiting. To a slight extent it lessens the force and number of the heart beats, and slows respiration. In still larger doses it produces symptoms allied to those of strychnia poisoning, but less marked. Paralysis, beginning in the posterior extremities, sets in, and the gastric juice and saliva are strongly impregnated with the drug. The action it has upon abnormally high fevers, however, is the most important. In healthy animals very little effect is produced on the internal temperature, but even here the effect is more marked than that of quinine and its salts. But he considers it a prompt and sure reducer of temperature where it runs high in pneumonia, pleurisy, typhoid fever, acute rheumatism, erysipelas, tuberculosis, giddiness and scarlatina.

He gives great preference to the hypodermic method of administration, as it has a better action, can be used in smaller doses, and less frequently. The best solution is 1 to 50 of warm water, and in this strength produces no local nor general bad effects. In high fever it must be administered in full doses every hour until the fever has abated. It is cheap and powerful, and Kaufmann thinks it should be substituted in every case for quinine. He also claims for it a marked hæmostatic and antiputrescent action. A medium-sized dose for the horse by hypodermic injection is 10 grammes (ʒ vj.), and for the dog 1 gramme, to be continued hourly until the fever subsides. The dose by the mouth is the same, though oftener repeated.

SUBCUTANEOUS INJECTION OF MUSTARD AS A COUNTER-IRRITANT.

The employment of mustard as a subcutaneous injection was first brought to the notice of the Central Veterinary Medical Society of Paris by M. Durien, a veterinarian, May 13, 1886. The details of the operation and indications for administration are as follows:

M. Durien prefers Savary's liquid essence of mustard, on account of its uniformity of strength and the facility with which it may be procured. He makes one or more injections, as the case requires, using alcohol or petroleum as a vehicle, to 1 to 2 grammes of the essence. He finds that œdema will be produced over a square decimeter, and claims for his method that results will be obtained in ten minutes, whereas with the ordinary sinapism it takes about two hours, and even then not always successfully; that as compared with the ordinary sinapism the engorgement is as intense, but less painful and more lasting. Out of twenty administrations the only complication was a small abscess at the point of injection, and that healed kindly. The operation may be performed in any region, but the best results follow where the skin is thin. The advantages claimed are:

(1.) That the essence being of uniform strength, the practitioner is certain of the result.

(2.) The results are immediate, a few minutes being sufficient.

(3.) Saving in time; six sinapisms can be carried in a very small volume.

(4.) Economy, the price of the essence being small.

(5.) No dressings are necessary.

M. Durien employs the essence of mustard in the following regions for the following diseases:

1st. In the neck, in cases of vertigo and ophthalmia. 2d. In the chest and sides, for heart and pulmonary troubles. 3d. In the abdomen, for typhoid fever, enteritis, colic, etc. 4th. In umbilical hernia, round the circumference of the tumor, the hernia being reduced in two cases about the tenth day.

M. Cagny uses it in the same way in doubtful cases of glanders, to assist diagnosis. In one doubtful case, with enlargement of the submaxillary gland, painful swelling of the hind limbs, but without nasal discharge or ulceration of membrane, he made two injections, one on each side of chest, and in forty-eight hours the ulcer and nasal discharge appeared.

AZOTURIA.

An Essay read before a meeting of the Veterinary Association of the State of Ohio, held at Cincinnati, July 26th, 1888.

By A. V. Derr, V.S.

Mr. President and Gentlemen: The subject that I have chosen to bring before this meeting is a disease that is of vast importance to the veterinary profession, as well as all of those that have an interest in the equine race. It is a disease that has given rise to quite a diversity of opinion as to its cause.

A number of writers have written and tried to point out the true pathology of this disease, but we are still in the dark as to the cause of it, and it has been called by different names. It has been termed, by some writers, albuminaria, and others hysteria, and some hemogloburia, and by the Germans "swaz herwindi," and to-day it is called azoturia. We were taught at the college that it was due to a hypernitrogenous condition of the blood in the system in general. And I understand that the Professor of the American Veterinary College taught his pupils that it was due to the liver failing to transform the albuminoids into urea. But I will have to differ in my opinion from the theories of both our worthy Professors. If the former means to say it is due to a hyponitrogenous condition of the blood in the system in general, I would agree to a certain extent; and as to the other, I cannot agree at all, for the liver has nothing to do with this disease, which I will try to prove to you before I close my paper on this subject. But my theory as to the pathology of this disease, or the elements that cause it, lead me to believe that it is due to an excess of carbonic dioxide, formed in the system from the waste products that are given off from the muscular system, and the nutritive material that is taken into the circulation to replace the waste which the muscular system undergoes while in action. And to fully understand this, we must become conversant with the mechanism of the equine system and the physiology of its action.

Let us take a physiological view of the equine, and what a beautiful piece of mechanism do we see in the formation of the horse; and what a number of systems do we find in the construction of one great system, all working in perfect harmony with each other to maintain health. But if one of these becomes affected through negligence or ignorance of hygienic treatment, how soon we observe one or more of them affected through sympathy; and this is where so many of the writers observe symptoms that give rise to their theories as to the pathology of this disease.

As we stand and gaze at a horse in health, what do we behold? I know of nothing more befitting to call it than a chemical laboratory, with all the conveniences that are required to operate it; and to learn all the chemical changes that take place, I am afraid, will never be known to the profession. But let us take a physiological view, and note a few of the chemical changes that take place within this laboratory.

The most noted one is the reparative change, or in other words, the building up of the system; for we see if the horse did not receive food or water, it would be only a short period of time till he, as a then constituent entity, would disappear and the change would be marked and absolute; and this would appear more plainly while the horse is at labor. So that we learn that to maintain this body we have to give the horse food to replace the waste which the system undergoes in life. Let us now examine into this "wasting."

To maintain life within this body there must be a certain temperature, termed animal heat, and we see this brought about by the burning up of its own tissues. This loss must be replaced by the food the horse partakes of. And here is a phenomenon that is very complicated and hard to understand. The combustion is produced by the oxygen and carbon coming in contact with each other.

Now let us look to the composition of the blood for a moment and note two of the elements it contains and their action.

One is hematine, and the other paroglobuline, which has the affinity of drawing oxygen from the inspired air and circulating it through the circulatory system to meet the carbon that is given off from the muscular system. And we learn that the waste to the muscular system is not thrown off till the muscle is contracted; and right here is where we find the phenomenon of appropriation take place, and combustion is supported, and when the muscular system is in a state of quietude the waste products accumulate in the muscular system in an abundance; and also the blood becomes overloaded with nutritive material from the food which furnishes the life of the animal. Now as we look a little further, we see a set of vessels called lymphatic vessels, and they originate in the local parts of the body and extremities and terminate in the right and left subclavian vein. Another peculiarity of this system is that they pass from without inwards, and the movement of the fluid within this system is carried on partly by the endosmosis of the fluid into the interior of the vessels, and partly by the contraction of the muscles pressing upon their walls.

Here it is that we learn one of the phenomena: that exercise plays an important part in the pathology of this disease. We know that when the horse is first attacked with this disease, if stopped and the muscular system is brought into a state of quietude, the symptoms will pass off, and in the course of an hour or two the horse can be moved on without any serious results in most cases. Now, if it was due to the liver failing to transform the albuminoids into urea, we would, upon an analysis of the urine, find that the urine contained less urea than in health.

But on the contrary, we find an excess of urea, and all diseases of the liver manifest themselves by more or less premonitory symptoms. In azoturia we have no such premonitory symptoms that are visible, and in fact the horse seems, when taken out of the stable, in better health than usual; for the first thing we generally hear, when called to see a case of azoturia, is: "I never saw my horse in better spirits than when I first started out with him; I could scarcely hold it, for it seemed so spirited." In some cases, before the horse is driven a half mile it is attacked with the disease and falls, and seems a total wreck to the driver.

Then, can it be that the liver will take on such a change in so short a period of time, and be so functionless and deranged that it will fail to transform the albuminoids into urea, and again in a few hours time, in some cases, if treated with hygienic and medicinal treatment, and in other cases with scarcely any treatment except hygienic, leave the horse convalescing and soon all right?

We see that by stopping a horse when we first notice the disease manifesting itself, would that have anything to do with abating this disease, if it were the liver failing to transform the albuminoids into urea, for the blood would still circulate through the portal system the same, and the cause would still remain until the fatal point was reached, or would be abated by medicinal treatment; and again, if it was the above stated cause, why would not all cases be attacked the same, instead of some in the anterior and some in the posterior, while others in the whole system?

We know the liver is one of the largest secretory glands in the body, and one of the most vital organs of the viscera; and when once so functionally deranged that it will not transform the albuminoids into urea, we would see more or less premonitory symptoms before the horse was started on its journey, and in place of the horse going out of the stable in fine spirits, it would be languid and inactive.

Let us notice a few of the symptoms of azoturia, to discover the manner and the reason for the manifestation of the disease. When carbonic dioxide is first formed it acts as a stimulant and seems "to brace the horse up," similar to a dose of alcohol; while when it is formed in excess till it produces its physiological action, it will cause clonic or tonic spasms of the muscles involved. Another symptom we notice is the extensive perspiration. When carbon and oxygen unite through a chemical union, there is a certain amount of heat formed which is eliminated from the system by the cuticles of the common integument, which acts as a diaphoretic, and causing excessive perspiration. Another channel in which this carbonic acid gas is given off is the respiratory system, for the breathing will be accelerated, which is caused by the carbonic acid gas stimulating the pneumogastric nerve; and that nerve being given off from the medula oblongata, the impulse is sent to that point and then reflected down the spinal cord to where the phrenic nerve is given off, and that nerve being the nerve supply to the diaphragm, it stimulates that nerve and through it the diaphragm, thus causing it to act faster and thereby producing accelerated breathing.

Another peculiarity of azoturia is that we always observe the largest muscles involved—those muscles that have the action for propelling the body, such as the psoas and gluteal and vastus, as well as those of the fore extremities.

We know that a large muscle will give off more waste than a smaller one, and it will take more nutritive material to replace the waste of that muscle; and this fact tends to lead me to believe that the elements that combine to produce the disease are produced in the muscle itself, being the product that is given off from them and the nutritive material that is carried there by the arterial system to rebuild them. On that theory we can account for this disease attacking the largest muscles in different parts of the system and the principal muscles of locomotion, and the faster and more exercised these muscles, the faster will the compound be produced. Here, again, we can account for the phenomenon that the faster the horse is exerted the more serious will be the case. We also observe, in the treatment of azoturia, that if we can be successful in keeping the patient quiet and from struggling, we can soon bring the disease under our control and have our patient on the road to convalescence. And one more marked symptom we observe is the dark-colored urine, which I think is due to some chemical reaction from the transformation of the urea into an ammonia compound.

My conclusion, therefore, is that azoturia is produced, not by the above theories which I have mentioned in this paper, but is due, as I have said, to an excess of carbonic dioxide, formed in the system from the waste products that are given off from the muscular system and the nutritive material that is taken into the circulation to replace the waste which the muscular system undergoes while in action.

SHEEP DISEASES: THEIR CAUSES, NATURE AND PREVENTION.*

By Thomas Walley, M.R.C.V.S.

(*Continued from page* 215.)

The Kidneys.—These organs, though small as compared with the liver—and especially, I think, small in the sheep as compared with those of other animals—are, nevertheless, of vast importance in relation to health. Unlike the liver, pancreas, &c., *they are not producing organs*, *i. e.*, nothing that is formed in them is ever sent back and used up in the system, with the exception of water, which, in the case of deficiency of that fluid in the body, and in dry weather, is supposed to be reabsorbed from the kidneys. They are essentially excretory organs, serving to get rid of excess of water, of salts and of waste matter; as also of the poisonous products of cells (leucomaines) which, if left in the blood, would act as poisons. Any interference with or arrest of their function is followed by grave consequences, and no disease is more dreaded by the physician than kidney disease because he knows full well that it means in the long run death by the action of such deleterious matters as the products of oxidation which are allowed to accumulate in the system. Arrest of the function of the kidneys is to some extent compensated for by increased activity of the skin and the bowels; hence, if by any means the functions of these organs is interfered with the disease of the kidneys is rendered more grave.

To illustrate the rapidity with which certain matters are passed out of the system I may direct attention to the fact, that if one puts his feet into a solution of potash or soda those salts can be detected in a short time in the urine; or if turpentine be rubbed into the skin, even the skin of the hands, it is detected in the urine in a very short time by the odor of the "sweet scented violet" which it imparts to that fluid.

One important thing I would particularly direct attention to here, and that is, that whenever the albumen in the blood becomes so degraded, as it too often does, as to be unfit for use, it is passed out by the urine, in which it can be detected by glazing or varnishing the skin of the hand when it is allowed to flow over it, or by subjecting it to heat, when it coagulates. Not only the albumen but the coloring matter of the blood, when it is dissolved out of the cells, is passed off in the water; and this is the explanation of the color of the urine in the disease known as "red water" in cattle, a condition not usually seen in the sheep because in this animal the colored water of the blood is, curiously enough, thrown into the cavity of the abdomen, causing "bloody dropsy of the belly" (sanguineous ascites).

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*Transactions of the Highland and Agricultural Society of Scotland.

Under certain circumstances, the kidneys excrete enormous quantities of clear water, constituting *diabetes;* but this is not noticed so much—except by observant shepherds—in the sheep as in the horse. In the latter animal it is frequently caused by mouldy bad foods, by mow-burnt hay and grass, or hay grown with excessive quantities of nitrate of soda. Diabetes, if unchecked, kills by exhaustion.*

The spleen (melt) and the lymphatic glands (kernels) are also of great importance to animals, for by them the white cells of the blood are manufactured, and in certain diseases the quantity of white cells becomes so excessive as to far outnumber the red cells constituting "white cell blood" (leucocytosis) and producing emaciation and death. The spleen is influenced injuriously by fever poisons and by the organisms of "anthrax," in which disease it is often the first organ to become affected. The spleen probably serves other purposes than that of manufacturing white cells; as iron, soda, and phosphates, with various extractive matters, are found in tolerable quantity in its ash when it is burned.

The lungs are of the greatest possible importance to life, and any interference with their function exercises an injurious influence upon the whole of the system and more particularly on the blood and the brain, as it is through their agency that carbonic acid is got rid of from the blood and oxygen supplied to it; or, in other words, *it is in the lungs that the change from venous to arterial blood takes place.* Watery vapor too is exhaled by the lungs, and probably, to some extent, volatile matters also. Interference with the excretion of carbonic acid by the lungs tends to produce plasticity of the blood and favors congestive processes.

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* During the last winter the author has frequently detected degeneration of the kidneys in the carcasses of sheep which had suffered from *water braxy.* He pointed out this condition in similar cases many years ago.

The skin, though last to be considered, is not the least in importance, particularly to the sheep.

From this structure, under ordinary circumstances, watery vapor is constantly being exhaled, constituting *insensible perspiration;* and in the event of any derangement of the kidneys it takes on, if allowed to do so, compensatory action and assists in getting rid of the excess of water from the blood. Not only does it give off water, but it also, under certain conditions, absorbs water; that it possesses this function is shown by the fact that if an animal is placed in a bath and retained there for a time, it gains in weight.

Warmth favors the evaporation of moisture, cold retards or arrests it; and this is a matter of great importance to the sheep because when its fleece, as so often happens, is saturated with water and the weather is cold the skin cannot perspire; on the contrary, water is absorbed and this is often aggravated by the watery nature of the food, and by inactivity, from disease, of the kidneys, and dropsy results.

The facts just noted account for a further fact, viz., that while the sheep can withstand the effects of almost any degree of cold it is almost injuriously affected by *cold and wet combined;* and this is especially true of lambs.

The perspiratory function of the skin is not the only function of importance that it performs. It is a *breathing or respiratory* organ also, though its powers in this direction are limited; nevertheless, if the skin is covered with some impermeable material, such as varnish, or, as is frequently done in the case of affiliation of lambs, with a lamb skin, the animal dies. It was at one time thought that death in these cases was due to suffocation; now, however, it is believed to be due to poisoning. As the temperature lowers materially, such a proceeding would certainly arrest the excretory function of the skin most effectually.

That oxygen is taken in and carbonic acid given off by the skin has been shown by direct experiment.

The *excretory function of the skin* is of the highest importance. The sweat usually contains common salt, ammonia and fatty acids in varying though small proportions; but it is further known that under some conditions other materials are excreted, such as waste products and even coloring matter, and in some instances certain constituents of the blood also. In disease of the kidneys matters usually passed off by these organs have been found in the sweat.

In all animals a certain quantity of fatty (sebaceous) matter, known as *yolk* in the sheep, is secreted by the skin, but in no animal is the amount so great as in the sheep, and it is early noticed that in an unhealthy animal the fleece becomes dry and harsh instead of greasy.

Arrest of this secretion is of most importance in the case of animals exposed to cold and wet, for it leaves the skin at the mercy of these influences and allows of the ready absorption of the latter. Yolk contains a large percentage of potash, which is obtained from the soil and removed in the wool.

Having considered the influence of the action of the different organs of the body in the production of disease, or rather I should say in the preservation of health, I will next look at the influence of foods and for brevity's sake will group these foods—1st, into those of a succulent character, *i.e.*, containing large proportions of water; 2nd, into those rich in heat-producing material; and 3rd, into those rich in flesh-forming substances.

(1) *Succulent Foods.*—It follows, as certain as light follows darkness, that in proportion as watery elements increase nutritive elements decrease, and in no class of food is this so strikingly shown as in turnips, which contain about ninety parts of water to ten of nutritive matter. The same applies to grass which has been rushed by excess of moisture, artificial stimuli and warmth.

Now, if these foods are not supplemented by others of a nutritive character disastrous results must and do follow; the class of diseases produced being those in which lowered vitality and debility with dropsies—such as water braxy, shell sickness, vanquish or trembles—are marked. The lowering influences of such foods are aggravated by low temperature and exposure to cold winds, particularly east or north-east winds, but of the latter more anon. Excessive quantities of turnips are most injurious when artificial manures, especially salines, have been too generously used and there has been long-continued wet weather. Moisture within, moisture without, moisture above, below and around, will tell its tale; will dilute and impoverish the blood and macerate and soften the tissues; will disintegrate the cell elements and render them incapable of performing the functions of organic life; moreover, it will affect the blood cells and the walls of the blood-vessels injuriously.

While swedes are more nutritious than white turnips, they too may be overdone; and owing to the quantity of sugar they contain they produce fatty changes in the liver and as a result thereof deficiency in blood supply, especially of red blood, with a tendency to throwing out of fluids of an albuminous character into the tissues, constituting " turnip braxy."

I have seen sheep (especially lambing ewes) that have been fed *ad libitum* on swedes, without any complementary food, die in dozens, their carcasses laden with fat but not a teacupful of blood in the veins of any one of them; and in the case of breeding ewes, I have seen the recently born lambs the subjects of internal dropsies. I have again seen ewes fed in the same way, on swedes which have been forced with artificial manure, especially phosphatic manure, die in dozens from *milk fever* (so called in some districts) while their lambs have succumbed to *joint-ill;* and some years ago, Mr. Robertson, late of Kelso (the late Professor Robertson), assured me that he had, by way of experiment, produced these diseases at will.

Foods rich in carbohydrates and fatty matters are, in excess, extremely injurious, bringing about, as they do, the changes already noticed in the liver; and if sugar is superabundant, diarrhœa or scour. Moreover the blood becomes over-laden with their products and highly plastic from imperfect oxidation, and congestion is the result.

Foods rich in flesh-forming material (*proteids*) are, in too great quantity, also highly injurious, tending, as they do, to an undue accumulation of albumen and fibrinous elements in the blood, thus taxing the cells to their utmost to appropriate the nutritive matter offered to them and so overpowering them, as it were, as to prevent their normal function: in this way imperfectly formed tissue is produced and the result is the advent of congestive and inflammatory conditions (so-called *inflammation*) and also extravasations of blood into the tissues, producing one form of so-called *red braxy.*

Milk may be briefly alluded to here seeing that it contains a relatively large amount of proteid matter as well as fat. It is a well-known fact that milk contains all the elements necessary to the nourishment of the animal body and it is, practically, the only food of which this can be said. If, however, milk is deficient in nutrient materials and in salts, owing to some inherent defect in the blood of the animal that produces it, we cannot expect that the consumers of it can either retain their health or grow; and, as a matter of fact, nearly every disease from which young animals, whether lambs or otherwise, suffer, is due to impoverished or to excessively rich milk. Moreover, milk is most certainly a conveyancer of disease-producing germs and other injurious matters from the mother to the offspring, as is seen in anthrax (though this is denied by some) and in the case of vegetable and animal poisons. In the artificial rearing of young animals, skim milk, mixed with lime water, may be substituted for sweet if the latter is found to be too strong.

Innutritious food is injurious in a twofold sense—1st, animals require to take in an excessive quantity in order to obtain a sufficient amount of nutritive matter and thus the digestive organs become overtaxed and weakened, and indigestion results; 2nd, the tissues of the body do not gain sufficient nutrition, and weakness and debility follow, a matter of the last importance in pregnant ewes, as they cannot, under such circumstances, provide sufficient nourishment for two lives, or it may be for three or four.

Dirty foods, i.e., dirty turnips and fouled or sanded grass, are injurious, as the dirt and sand collects in the pouches of the stomachs and in the blind gut (cæcum), mechanically interferes with their action, and produces irritation and inflammation, and even ulceration.

the Western States and Territories, he invariably carried with him, with a blind and unquestioning faith, a hypodermic syringe and some permanganate of potassa, prepared in case of serpent bite to promptly administer according to de Lacerda's directions, but his confidence was weakened to a certain extent by the results of the experiments of Vincent Richards, Fayrer and others, and, to verify if possible the different statements, he determined to experiment himself with the permanganate, and as will be seen from the recorded notes below, was forced to the conclusion that this salt was of little or no value, at least in poisoning from *Crotalus* venom, if de Lacerda's suggestions only are followed. It was not intended at first to take up the subject of other so-called antidotes, but a good supply of serpents having been obtained by the National Museum, by whose co-operation the experiments were performed, it was thought advisable to continue the investigation still further. In addition to this reason, quite a number of persons, hearing of the experiments, have from time to time sent various reputed antidotes or have suggested certain methods of cure.

The venom used was obtained from several healthy specimens of the northern rattlesnake (*Crotalus horridus*) in the manner recommended by Weir Mitchell. The snake is seized a short distance behind the head by means of a staff, having at its end a thong of leather passing over the end and through a staple, and this is tightened or loosened, as occasion may require, by means of a string extending up the handle. It has been found necessary not to confine the snake's head too tightly, as otherwise it cannot be induced to strike. The head being secured, a stick having its end covered with absorbent cotton is pressed against the snake's mouth, and it is teased until sufficiently irritated to strike its fangs into the cotton, which receives the venom and obviates any danger to the fangs, as it has been found in allowing snakes to strike against a saucer the fangs are frequently broken off. Generally a snake will strike three or four times very viciously, and then relapse into sullen apathy. We have in vain endeavored to procure venom from our snakes by pressing over the poison glands, but this has been unsuccessful except in one instance unless

Frosted food should always be avoided if possible and sheep should not be put on frosted turnips until the day is well advanced; it is particularly harmful in pregnant ewes.

Decomposing and decaying foods are the most injurious of all; and it passes my comprehension how an enlightened man can in the early spring, when his crop of swedes has exceeded the wants of his flocks and herds, take the half or wholly rotten roots and scatter them thickly on the pastures for his sheep to eat. They may manage to pick out "tit bits" here and there, but in doing so they swallow also a large proportion of decomposing matter, than which nothing is more likely to set up septic inflammation of the true stomach and bowels, and produce diarrhœa and even *blood poisoning.*

Mouldy foods may be placed in the same category with the foregoing, and by the light of our greater knowledge of the action of fungi in the system we are warranted in attributing many of the diseases marked by a depraved condition of the blood to their influence.

Most certainly many moulds are active agents in the production of inflammation of the mucous membrane of the bowels, and they probably also in some instances cause abortion.

With impure foods we may class *impure water*—a prolific source of morbid conditions marked by depravity of the blood, and by diarrhœa and dysentery.

(*To be continued.*)

SNAKE BITE AND ITS ANTIDOTE.—II.

EXPERIMENTS WITH CROTALUS VENOM AND REPUTED ANTIDOTES, WITH NOTES ON THE SALIVA OF HELODERMA ("GILA MONSTER.")

By H. C. Yarrow, M.D., Curator Dept. Reptiles, U. S. National Museum.

(*From Forest and Stream*).

(*Continued from page* 223.)

After reading de Lacerda's views regarding the antidotal effect of the permanganate of potassa in cases of serpent bite, the writer was so firmly convinced of its merits that, during his travels in the snake was chloroformed, and if this is done the reptile generally succumbs within a few days. This fact is mentioned as it has been learned through the public prints that some experimenters in a neighboring city have succeeded in squeezing out the venom while the snake was active.

The quantity of venom obtained from different individuals varies greatly. From a large rattler weighing perhaps three or four pounds, our first attempt resulted in securing about fifteen drops of venom after the reptile had struck three times; but if the process is repeated every day or two but a very small quantity is obtained. The smaller snakes give a much smaller quantity. The cotton after having received its charge of venom was removed from the stick and washed out carefully in glycerine, and by measuring the quantity of this substance first, and then after the venom had been added, we were able to tell accurately the strength of the solution, which consisted of eight drams of chemically pure glycerine and one dram of the venom. This is the preparation which was used in all the experiments, and is called glycerine-venom. One fact should be stated as bearing upon the popular belief that snakes, if kept from water, are not poisonous. It was found that by keeping the rattlers without water for a week or two the quantity of venom was materially smaller than when we allowed them free access to water, and that the color of the venom, which was yellowish-green when no fluid was supplied, became much lighter in color when they had freely drunken. We have never been able to induce our rattlesnakes to eat, although they have been tempted with a variety of food, but water they consume largely.

When the present supply of rattlers was first received, it was a very easy matter to grasp any one of them behind the neck with the snake staff; but experience has taught them that they must do something against their will, and now it is quite difficult to secure them, and even when secured it is difficult to make them strike; in fact, one specimen is now so tame that it may be handled with impunity, and it is the writer's belief that a rattler, if carefully and tenderly handled, will not bite the hand that grasps it. It is believed the Moqui Indians are aware of this, and it enables them to handle with impunity the venomous snakes used in their fearful dance, so well described by Capt. John G. Bourke, U. S. A. Many persons suppose that the fangs of a rattler once removed, the reptile is harmless for all time, or that at least a year is required to replace the fangs. This is an error, for the writer has in his possession a rattler in which the fangs were twice replaced after an interval of three weeks only. As the rattler doubtless knows when the contents of the poison gland is exhausted, as is evidenced by his refusal to bite after two or three efforts, he probably also knows that it is useless to show fight when the fangs have been removed, and this has been practically tried on one of our snakes. She continued to coil and rattle, but no matter how much teased and irritated, makes no attempt to bite.

An interesting fact has been noticed during the course of our experiments, and one which it seems important to record. It is, that the rattler does not invariably use both fangs in striking, the muscular movements of either side of the jaw being quite independent of the other, and quite at the will of the reptile. The practical bearing of this point is that, occasionally in snake bite, but one puncture will be found, and some doubt might exist if this was really due to the serpent's fangs or not. Another point of interest lies in the fact that if only one fang is plunged into the tissues, the patient will not have received so large a dose of venom as if both teeth had been used, and a more favorable prognosis can be made.

Experiments with Permanganate of Potassa.

This was the first substance used in the experiments, and de Lacerda's directions were carefully followed with the exception that chemically pure glycerine was used as a menstruum to preserve the venom, instead of distilled water. The writer is aware that de Lacerda claims that if glycerine is used to hold the venom in solution, the permanganate is rendered inert, but this is not the case, as in our experiments it has been found that a five per cent, solution of the salt if added to the glycerine and venom solution neutralizes it poisonous effects; moreover, if a ligature is placed around the leg of an animal and a certain quantity of glycerine-venom is injected below the ligature, followed by a solution of the permanganate, no poisonous effect is produced by the venom. This effectually disproves de Lacerda's statement. It should be mentioned that in all the experiments tried with the various reputed antidotes, different quantities of these were always first injected into the animals on the day preceding the test with the poison, in order to ascertain if the remedy itself was capable of producing mischief or death.

In order to ascertain the amount of glycerine-venom required to destroy a pigeon, the following experiment was made Oct. 21, 1887.

Oct. 21, 1887—11:45 A.M.—Injected pigeon in the lower part of left breast with 3 minims of glycerine-venom solution.

11:48 A.M.—Pigeon commenced to tremble and had difficulty in opening the eyelids.

11:55 A.M.—All voluntary motion ceased.

12 M.—A good deal of tumefaction was noticed around the part injected.

12:05 P.M.—The pigeon has recovered partial muscular movement and the eyes appear brighter.

12:15 P.M.—The pigeon has again lost muscular power.

12:35 P.M.—The pigeon gave two slight flutters, a few gasps and was dead. A post mortem was made before rigor mortis set in, and it was found that the whole of the left breast was ecchymosed and congested with dark blood, and the heart was filled with venous blood.

It was thus discovered that 3 minims of the venom solution was sufficient to destroy a large healthy blue rock pigeon in less than one hour, the strength of the solution being eight drams of glycerine to one dram of the crotalus poison.

Oct. 22—11:43 A.M.—Injected pigeon with 5 minims of venom solution in left breast.

11:45 A.M.—Injected 17 minims of 1 per cent. solution of potassa permanganate in left breast.

11:54 A.M.—Convulsive movements of the pigeon's head was noticed.

11:55 A.M.—Injected 17 minims more of the permanganate solution, as the bird was getting very feeble. Opisthotonotic spasms took place.

12:15 P.M.—The pigeon died without a struggle.

In this experiment the permanganate solution was injected twice in the immediate vicinity of the venom injection. It should not be forgotten that the 1 per cent. solution of the permanganate is the one recommended by de Lacerda.

Oct. 25—12:45 P.M.—Injected a large healthy English rabbit in the left thigh with 5 minims of the venom solution, followed at once, without removing the hypodermic needle, with an injection of 25 minims of the 1 per cent. permanganate solution.

12:50 P.M.—Rabbit began to show the effects of the venom; respiration very much quickened; heart beats fast and is weak; animal indisposed to movement.

1 P.M.—Rabbit drank a little water, but was breathing short and fast.

1:10 P.M.—Part injected quite swollen and ecchymosed, but otherwise the animal seemed to be better.

1:40 P.M.—Rabbit was eating, and appear to be doing very well.

3 P.M.—Rabbit seems perfectly well with the exception of a stiffness of the leg injected.

Oct. 26—12 M.—Rabbit appears perfectly well with the exception of a slight lameness and some swelling of the injected leg.

Oct. 27—Rabbit found dead in the cage. Post mortem: Heart contracted, lungs, liver and kidneys congested, bladder full of urine, intestines full of fæces. In the vicinity of the point of injection was found a large abscess, and the surrounding tissue and the whole limb was ecchymosed, and had sloughed deeply. The liver, lungs and mesentery were studded with parasitic cyst worms still living. Decomposition was well advanced in the affected leg.

In the next experiment it was decided to use a smaller dose of the glycerine-venom, the subject being a large healthy English rabbit.

Oct. 27—11:45 A.M.—Injected rabbit in left thigh with 3 minims of venom solution, to which was added 10 minims of water without withdrawing the hypodermic needle; this was followed at once with an injection of 25 minims of 1 per cent. permanganate solution.

11:50 A.M.—Respiration and heart's action much increased, with a curious backward movement of the animal.

11:55 A.M.—Complete loss of motion in leg, with considerable tumefaction of part injected. Animal averse to motion even when irritated.

12:30 P.M.—Animal moves more freely, and seems better, although there is much more swelling and discoloration in the vicinity of the point of injection.

3 P.M.—Animal appears to be doing very well.

Oct. 28—12 M.—Great tumefaction of leg and thigh, œdema of rectum. Punctured and let out large amount of bloody serum. Animal has eaten, but is averse to movement.

3 P.M.—Animal very sick, unable to stand; all motion of hind legs lost; is very weak.

Oct. 29—10 A.M.—Rabbit was found dead in its box, excessive hemorrhage having taken place from the wound. Post mortem: great infiltration of blood in the leg and surrounding tissue. Much decomposition and sloughing.

It was now determined to try the effect of placing a ligature around the leg of a fowl before injecting the venom, with the following result:

Nov. 2—Hen injected in left thigh with three minims of venom solution with 10 minims of water added.

12:40 P.M.—After a ligature had been placed two inches above the place of injection, without withdrawing the needle, 25 minims of 1 per cent. permanganate solution was injected.

12:50 P.M.—The ligature was removed.

1:15 P.M.—No effect.

1:25 P.M.—Hen draws up the leg injected and stands on the other.

Nov. 3—Fowl apparently in fair condition, but there is much greenish discoloration of the leg and softening of the tissues contiguous to the joint where the venom was injected, abscess forming. Is quiet and stands upon both legs, but does not use the left leg.

Nov. 4—Fowl in about the same condition as yesterday; greenish discoloration more marked, but not extending so far into the surrounding tissue. Part quite soft and feverish.

Nov. 5—Fowl suffering no inconvenience from the injection; discoloration of the part subsiding; very little swelling.

Nov. 6—No result.

Nov. 7—Discoloration and swelling of part injected have entirely disappeared and the fowl has entirely recovered from the effects of the venom.

It will be seen from this experiment that the permanganate had a decided antagonistic effect to the venom, doubtless because the ligature confined the latter to a limited area, and prevented it being carried into the general circulation. In the next experiment the venom solution and permanganate were mixed together and used with the result as noted below.

Nov. 3—12:10 P.M.—Injected into the right leg of a fowl 3 minims of glycerine-venom, 5 minims of water and 30 minims of 1 per cent. solution of permanganate, mixed in vessel and allowed to remain together two minutes. Solution of permanganate changed at once to a color resembling solution of dragon's blood.

Nov. 4—Fowl appears to suffer no inconvenience from the effects of yesterday's injection. Slight swelling and discoloration, and only a slight increase of temperature.

Nov. 5—Fowl as well as ever.

Nov. 7—Discoloration of and swelling of the part injected has disappeared, and the fowl is in a perfectly healthy condition.

With a view to still further determining the beneficial effect of the ligature, the following experiment was tried with a large dose of the venom and of the permanganate:

Nov. 10—12:45 P.M.—Injected 10 minims of venom solution into right leg of hen below ligature, followed at once by 25 minims of 2 per cent. solution of potassa permanganate. Ligature allowed to remain on three minutes. The tissues near puncture were well kneaded. (This chicken was injected before with 3 minims of venom and 1 per cent. solution permanganate.)

2:30 P.M.—Fowl inclined to stand still, otherwise no other symptoms noticed.

Nov. 11—11 A.M.—Fowl not inclined to move around, but sits down; not much swelling or inflammation of the part injected, but a little darkened in color; eats well.

2:30 P.M.—Fowl appears to be much better than she was this morning; eats and drinks as usual.

Nov. 12—11 A.M.—Fowl slightly lame in the leg injected; part swollen, with greenish discoloration; eats and drinks well.

2:30 P.M.—Fowl in same condition.

Nov. 13—No result.

Nov. 14—Fowl entirely recovered.

It was thought advisable to try the antidotal effect of a much stronger solution of the permanganate, giving a small dose of venom, the result being as follows:

Nov. 21—12:18 P.M.—Injected 3 minims of venom solution into left leg of hen, followed at once by 25 minims of 5 per cent. permanganate solution through the same puncture without removing the canula.

12:22 P.M.—Leg drawn up and trembling; respiration quickened, and chicken lying down—can hardly be made to stand up and oscillates backward and forward, feathers ruffled.

3 P.M.—Chicken will not stand, loss of motion of leg injected.

Nov. 22—11 A.M.—Chicken somewhat better, can use leg injected a little, but still inclined to lie down. Much swelling and greenish discoloration of the leg.

Nov. 23—Hen in about the same condition as yesterday. Will not stand up.

Nov. 25—10 A.M.—Hen found dead; much swelling and sloughing of the leg injected.

This same experiment was repeated upon other fowls and upon rabbits, the result being death.

It should be remembered in this connection that de Lacerda claims that in nearly every case in which he used a 1 per cent. solution of the permanganate the animal recovered, and moreover he claims that the antidotal effect is produced even if a considerable period of time has elapsed after the injection of the venom. In our experiments we have shown that even a 5 per cent. solution is of no value, and the reputed antidote was used immediately after the injection, in fact so soon as the venom was injected the barrel of the hypodermic syringe was immediately unscrewed from the needle which was allowed to remain imbedded in the tissues, the syringe was rapidly filled with the permanganate and the injection was then made. Sometimes less than half a minute was consumed in the whole operation.

(*To be continued.*)

REPORTS OF CASES.

TEMPORARY DEAFNESS AS A SEQUEL TO PHARYNGO-LARYNGITIS.

By Roscoe R. Bell, D.V.S., Brooklyn.

On July 1st I was called to see a horse in a boarding stable where I was at the time treating a number of horses affected with influenza of a mild type, the chief complication being laryngitis.

I found that my new patient was a bay mare, used for road purposes, six years old, of rather delicate build, and valued very highly by her owner on account of special qualities and the fact that he had raised her.

This was at about 9 o'clock on Sunday morning. She was very feverish (temperature 105°), very much dejected, eyes entirely closed, emitting a watery discharge; conjunctiva excessively congested; respiration hurried; pulse fast and very weak. She had a paroxysmal cough, and was very tender upon pressure in the region of the larynx. I prescribed stimulants, and had her throat rubbed with a strong liniment. In the evening her internal temperature had gone up to 107°; prostration more marked—staggering all over her stall. I now administered quinine in two drachm doses for three doses, and by morning her temperature had fallen to 104°, and she continued to improve under the stimulants until at the end of the week she began outdoor walking exercise, though she coughed considerably under the exercise. I prescribed a familiar electuary, and her cough gradually disappeared, her owner increasing her exercise until it consisted of a smart jog around the park.

In a week from this time her owner again called me in, stating that he believed his mare was deaf; that she took no heed to his chirping (which formerly had been all that was necessary to cause her to spring right into her gait), yet when he simply tapped her with the lines she manifested the most willing inclination to trot as fast as she ever did in her life.

I examined her and found that there was no doubt that she could not hear a sound, though everything about her external head was perfectly normal; no tenderness in the region of the ears or throat, but she had a discharge from the nostrils when her head was held in a dependent position—thus showing that there was a collection of pus in the gutteral pouches. Her owner was especially anxious to hear my prognosis, and I gave him a favorable one, upon the following grounds: The mare had been suffering from pharyngitis; the intermittent discharge from the nostrils told me that the inflammation had extended up the Eustachian tubes as far as the gutturals, and if it had gone that far why could it not extend on up into the middle ear, and by pressure of the inflammatory exudation upon the terminal branches of the eighth pair of cranial nerves, cause an interference with their function? And as the inflammation should subside, as was most likely (the mare being otherwise in perfect health), I argued that when the exudation became absorbed there would be a return of function. My prognosis has been verified, the animal hearing every word spoken to her by her owner when driving her.

I have never had experience with a case of this nature before, and our text books are as mute as a clam upon the subject; and since it would be extremely difficult to treat affections of an organ situated in the centre of the petrous temporal bone, I think that a proper prognosis is of great importance.

HYSTEROCELE.

By F. D. Hinebauch, V.S., Kalamazoo, Mich.

Since commencing practice, in the spring of '87, I have met with two cases of Hysterocele in the mare. The first case occurred July 18, '87, in a Clydesdale mare, the property of L. G. Bragg. The mare was first noticed ailing on the 17th. The following day the abdomen reached below the hocks. The mare was due to fold, and we determined to remove the colt. Upon examination, we found a rigid os, which it was impossible to dilate sufficiently for the delivery of the fœtus. As the symptoms were not very urgent, we decided to bandage the mare to prevent any further displacement and await results. The next day we made another visit, when we found the os dilated, with occasionally light labor pains, and we soon delivered the mare of a living foal, which lived for three days, and, had it not been chilled, the prospects would have been good for raising it. The mare recovered and is now at work, although unsightly owing to the pendant abdomen.

The second case was a Standard bred trotting mare, four years old, the property of S. A. Brown & Co., and was first noticed ailing July 12, '88, when there appeared to be a tumor forming in the mamary gland. It gradually extended until it reached the sternum, but did not become near so pendant as in the former case. There was a rupture of the skin about an inch long between the teats. On the 13th we were called to see the mare and found her in the above condition. We also found the condition of the os similar to that in the first case and proceeded in the same manner, and on the next day delivered the mare of a living foal, which lived for about twenty-four hours.

The mare is doing well, the hernia diminishing in size, the abdomen gradually assuming its normal position.

In the last case the head was doubled over on the left shoulder and the fœtus lay on its back. The fore legs were also bent backward and were lodged below the pelvis, making it somewhat difficult to bring into proper position.

PILOCARPINE AND PHYSOSTIGMINE.

By the Same.

At present the subject of Pilocarpine and Physostigmine is receiving a great deal of attention from some noted English veterinarians. I have used the drugs for over a year, and my observations lead to somewhat different conclusions from those arrived at by them—especially as to its sudorific action. I have noticed the most profuse perspiration within fifteen minutes after its administration. This is especially true in severe cases of acute indigestion. Not all cases on which I have used the combined drugs are susceptible to its sudorific action; the older and more debilitated or the younger, the more noticeible, while in good, strong, middle-aged animals I have rarely witnessed it.

While I do not believe the combined drugs are a cure-all, yet I think they can be advantagously used. In all cases of immobility and the various forms of colic, where there are malpositions of the alimentary canal, in such cases they may do harm. I have used the combined drugs with good success in azoturia, and also parturient apoplexy in the cow.

EVERSION OF THE BLADDER.

By Thomas W. Scott, V.S., Memphis, Tenn.

Mr. Editor:

Though a stranger to you, I ask space in your journal with a view to contributing to veterinary science. The subject of this communication is eversion of the bladder in a mare, which is, so far as I can ascertain, seldom if ever met with by veterinary practitioneers.

The case in point was an imported Norman mare, belonging to Mr. F. A. Decker, of the Groveland Stock Farm, Iowa, where I was at that time pursuing the duties of my vocation as a veterinarian. It was discovered soon after parturition, which had been performed with considerable difficulty. I account for it in the following manner, but am not sure as to the correctness of my view:

The fœtus must have had one of its fore feet down in front of the pubis in the pelvic cavity and pressing in the region over the fundus of the bladder, and when the uterine contractions came on must have turned the body of the bladder back into the urethral canal and, as the mare strained, it was everted.

After foaling the urine was seen to dribble constantly and the mare still continued to strain, and after the placenta was expelled the owner discovered the reddened mass protruding between the lips of the vulva, and, supposing it to be the uterus, at once telegraphed me to come and replace it, to which I at once responded, but it being a considerable distance from town, I was necessarily some time in arriving. I made a thorough examination of the parts, and though I had never seen or read of a case of eversion of the bladder, yet I soon learned that it was such a case I was dealing with, and no mistake. I at once set about to devise means for reducing it with as little irritation to the mucous membrane of the bladder as possible. I had a mare's steel catheter, to which I attached the rubber bulb from a human syringe and tied it tightly on, so that it was nice and soft and pliable. I introduced my right hand into the vagina and held the bladder down on the floor, so that when I pressed with the instrument on the fundus of the bladder it would not turn back further into the vaginal canal but would fold down into the urethal canal, which it did, with firm but steady pressure, until it was completely reduced. I held it there for ten minutes, during which time she made several attempts to force it out again. I had her blanketed warmly, and had cloths wrung out of hot water placed over the loins, and removed my hand and instrument and she stood quietly, except that she voided urine very often, which, on account of the irritation of the bladder, she could not retain long at first. I gave one injection of tepid water and belladonna and continued the other treatment, fed a loose, sparing diet for a few days, and she made a speedy and complete recovery.

EXTRACTS FROM GERMAN PAPERS.

EMPLOYMENT OF THE STOMACH PUMP IN THE TREATMENT OF DOGS.

By F. W. Turner, Ph.G. (Student A. V. C.)

For a number of years the stomach pump has been used in human practice of medicine, both for therapeutic and diagnostic purposes, but in veterinary practice this instrument has been almost entirely ignored. In the Berlin hospital for the smaller domestic animals the writer often had occasion to observe in dogs loss of appetite and derangement of the digestive functions. The animals manifested the following symptoms: great fastidiousness in the choice of aliments or total loss of appetite, frequent efforts at vomiting, which would end in a cough and the expectoration of a small quantity of tough and glairy mucous. This cough would often be the most prominent symptom besides the loss of appetite, and would almost create the belief that the animal was suffering from some pulmonary difficulty. Besides the above named symptoms, there were no indications of any acute intestinal troubles. Believing the cause to be a fermentation of indigested substances in the stomach, which brought about acidity of that organ and efforts at vomiting, the following treatment was indicated, viz.: removal of the abnormal fermenting substances and products.

In human practice the physician is enabled by means of the stomach pump to empty the stomach and wash it with some anti-zymotic solution. A stomach pump for use on dogs may be improvised out of a male horse catheter, which is introduced into the stomach through a perforated gag made out of a piece of board. To the exposed end of the catheter is attached, by means of a small piece of rubber tubing, a small funnel, and the apparatus is ready for use. In order to obtain a correct idea of the character of the materials contained in the stomach, the first and second rinsings should be made with clear water, the third and last rinsing should be done with a lukewarm solution of salycilic acid, 1 to 300.

The filling and emptying of the stomach is accomplished in the following manner: Into the funnel, held above the dog, is poured a quantity of water, proportioned to the size of the stomach, and at the same time the region of the stomach is very carefully kneaded in order to mix the contents thereof with the introduced liquid, then by lowering the funnel below the level of the stomach we obtain a syphon, by which means the stomach may be readily emptied. About the calibre of the catheter it may be said that a regular male horse catheter will also do for small dogs, it is even a necessity that this size should be used, in order to prevent stoppage by foreign substances. If the liquid should cease to flow it is only necessary to move the catheter up and down a few times and the fluid will resume its course. If too great a quantity of the liquid has been introduced into the stomach, or if the full stomach is kneaded too vigorously, vomiting readily occurs. In this case the catheter must be removed at once, as otherwise aspiration of the vomited matter with its severe consequences might occur. The result of this treatment has been very satisfactory in numerous cases on record. Dogs which persistently refused food have taken their food with relish after a single application of this improvised stomach pump. Although the apparatus has been used only in the treatment of dogs, there is no reason why good results could not be obtained in the treatment of other domestic animals also.—*Der Thierarzt.*

FERMENT IN OATS, AND THEIR EFFECT ON DIGESTION.

By the Same.

Previous researches have proved that during the process of digestion, in such animals as partake of raw, unboiled food, especially grain, a certain starch ferment which these grains contain assists in that function; *i.e.*, a part of the digestion of starch taking place in the stomach is due to the action of the amylotic ferment found in the grains. We might be led in the same manner to suppose that a part of the digestion of albumen depends on the action of a ferment contained in plants. In order to decide this question, we have first to prove the existence of a proteolytic ferment of a given energy in the ordinary grain or oats, used as food for domestic animals. Repeated investigations have given the following principal results. When a pulp, prepared out of water and ground oats, is subjected for some time to a temperature equal to that of the stomach, three different ferments, amylolytic, proteolytic and lactic acid become active. These ferments of oats are destroyed at the boiling point, but remain active in the stomach of a living animal, which proves that these ferments are important factors in assisting digestion in the stomach of such animals as partake of their food in a raw state. Without doubt, the amylolytic ferment is the strongest, as the latest experiments have shown about two per cent. of sugar after three hours of digestion with water, and 0.2 per cent. of lactic acid and 3.2 per cent. of sugar after seven hours of digestion. The lactic acid ferment is considerably weaker. After one hour's digestion 0.1 per cent., and after seven hours' digestion 0.2 per cent. of lactic acid were formed. The albuminoid ferment dissolved from the insoluble albumen of the oats about 0.5 per cent. in three hours, which would be one per cent. in from six to seven hours. In pulp made from the ground oats and water which had been subjected to a temperature of 212 degrees Fahrenheit, no lactic acid, no sugar and no solution of albumen were found. A 0.4 per cent. solution of lactic acid in water did not destroy the ferments or cause any change, but a 0.2 per cent. solution of hydrochloric acid almost entirely stopped the action of the ferments. Ice cold water stops fermentation as long as the water is kept cold, no sugar or lactic acid is found, but as the temperature rises the ferments commence to act.

These facts in relation to the diastacti ferment in oats are of practical and important value for the proper nourishment of man and beast in diseases of the organs of digestion. Patients suffering from imperfect digestion ought to receive the vegetable food in a raw state in preference to cooked. This accounts, to some extent, for the success of the vegetarians in the treatment of catarrh of the stomach, in liver troubles and in similar diseases. The food taken into the stomach in a raw state undergoes, in spite of the diminished quantity of gastric juice, a normal fermentative and digestive process, produced through the ferments in the raw food. If the food is taken in a cooked state, then it is subject to abnormal fermentations in the organs of digestion, which are apt to increase catarrh of the stomach. By cooking food, some nutritive matter is certainly rendered more soluble, and even dissolved; cooking is to some extent a predigestion, but nothing is gained by it for the patient. We know that by introducing dextrin and sugar, such as are formed by boiling or baking amylaceous articles of food, fermentation occurs a great deal quicker and more easily than if the starch were introduced in a raw state.

The grain eaters, a sect of vegetarians, adopt the habit of chewing the grain thoroughly, which is consequently well mixed with the secreted saliva, forming a milk-like pulp easy to swallow and pleasant to the taste. The enourmous quantities of saliva, which are secreted and taken into the stomach act in a doubly beneficial manner on a sick stomach. In the first place the saliva being alkaline, saturates and combines with a part of the superfluous acid ferments, and in the second place the diastic ferment of the saliva coming in considerable quantity into the stomach materially aids digestion. The efficacy of the proteolytic ferment of the grain is increased through the secreted saliva. Consequently it is advisable to administer to both man and beast suffering from imperfect digestion certain vegetable foods, not cooked, but in a raw state, and, if possible, dry, so that thay may be well chewed and macerated before entering the stomach.

—*Der Thierarzt.*

PROFESSIONAL ITEMS.

UNITED STATES VETERINARY MEDICAL ASSOCIATION.

Editor American Veterinary Review :

The regular annual meeting of the United States Veterinary Medical Association will be held at the Rossmore Hotel, 42d St. and Broadway, N. Y., on Tuesday, Sept. 18th, at 10 A.M.

There will be a number of papers presented for discussion.

C. B. MICHENER, *Sec'y.*

BUREAU OF ANIMAL INDUSTRY.

Some changes are about to take place in the service of the Bureau of Animal Industry so far as New York State is concerned, Prof. Law being obliged to return to Ithaca to resume his lectures at Cornell University. His place has been filled by Dr. William S. Devoe. While all have followed with interest the work done by Prof. Law, and regret his retirement, still we should welcome Dr. Devoe, who, though a young man in the profession, has established for himself a reputation which he well deserves.

BIBLIOGRAPHY.

TREATISE OF THE NON-MICROBIAN PARASITIC DISEASES OF DOMESTIC ANIMALS (TRAITÉ DES MALADIES PARASITAIRES NON MICROBIENNES DES ANIMAUX DOMESTIQUES). By Prof. L. G. Neumann, of the Toulouse School.

Veterinary literature receives a valuable acquisition in this excellent work, and its preparation reflects great honor upon the author. It meets a want much felt, but now well supplied. It cannot fail to benefit all who will read it, both for the information embodied in the text, and the valuable documents either contained in the volume, or referred to in the bibliographical notes which it contains.

The work treats of domestic animals alone, and the arrangement of the subject is a very simple one. The diseases are grouped organ by organ, and occupy eight chapters.

The parasitic pathology of all the tissues is successively treated, under the various headings of parasites of the skin; of the digestive apparatus; of the serous membranes; of the respiratory system; of the circulation; of the muscles, the cellular tissue and the bones; of the nervous centers and organs of the senses; and of the genito-urinary apparatus. Some of the chapters are subdivided for the clearer treatment of the specialties of animal and of vegetable parasitism.

NEW DICTIONARY OF VETERINARY MEDICINE, SURGERY AND HYGIENE (NOUVEAU DICTIONNAIRE DE MÉDECINE, CHIRURGIE ET HYGIENE VETERINAIRE). Begun by H. Bouley and continued by Messrs. Sanson, Trasbot and Nocard.

No one will complain of the new departure adopted by the editors and authors of this excellent work. It started in life many years ago, the first volume having been issued in 1856, and that which we are now noticing being the fifteenth, but following its immediate predecessor within six months after that had passed through the press—a good example of despatch in business, especially as contrasted with former rates of progress in publishing enterprises.

This latest volume shows no falling off as to contents and contributors from the high standard of its predecessors.

The eminent and widely famed obstetrician, Mr. St. Cyr, contributes an article on *Parturition*, which occupies nearly one-third of the 750 pages which comprise the volume, and is none the less valuable and interesting for representing ideas similar to those which the same excellent writer has already promulgated in his work on veterinary obstetrics, hitherto published. The subject of *Pathology* also occupies a considerable portion of space. In this category Mr. Leclainche defines the diseases of the *Umbilicus*, and is responsible, as well, for articles on *Osteoclasty*, *Palpation* and *Paralysis*. Mr. Cardiot writes on the *Diseases of the Ear*, and mutually with Mr. Leclainche treats of the affections of the *Bony System*, while the *Osteological Anatomy and Physiology* are elucidated by Mr. Montané. *Diseases of the Ovaries* are incubated by Mr. Labat, and Mr. Trasbot is charged with the question of *Papillomas*. In his articles on the *Parasites of the Ear*, on *Parasites*, *Parasitism*, and *Parasiticides*, Mr. Railliet once more shows his mastery of these sparsely understood matters, while he also contributes to the extension of our knowledge of *Fowls*. *Surgical Practice and Operations* are explained by Mr. Peuch; *Onanism* (an erroneous name for *Masturbation*) by Leclainche; *Ozena* by Trasbot; and the *Hygiene of Sheep* by Sanson, which completes the series of valuable dissertations which may be consulted in this freshest of the series of what must be justly esteemed a standard authority in its department of knowledge.

The title of the work suggests an awkward query, in respect to its descriptive adjective, "*New.*" If one may doubt the propriety of calling a work *new* which is nearly one-third of a century old, he may be met with a demand to explain how that can be *old* which is still unfinished. The conundrum is easily disposed of, but we leave it for others to grapple withal.

SOCIETY MEETINGS.

NEW JERSEY STATE VETERINARY SOCIETY.

The annual meeting of the New Jersey State Veterinary Society was held on Saturday, August 4th, 1888, at Hotel Shelburne, Long Branch, N. J., with Dr. J. C. Corlies, President, in the chair.

The Secretary called the roll, which was answered by a fair number of veterinarians from various parts of the State.

The Secretary then read the minutes of the previous meeting, which were adopted as read.

The President then read his annual address, in which he spoke of the past, present and future of the veterinary profession in New Jersey, at the end of which he was loudly applauded.

The annual election of officers resulted as follows: President—Dr. J. C. Corlies, of Newark, re-elected. 1st Vice-President—Dr. Theodore Declyne, of New Durham. 2d Vice-President—Dr. Eldon L. Loblein, of New Brunswick.

Dr. W. H. Lowe, of Paterson, was proposed as candidate for Secretary, but he refused to be a candidate as he had held the office for a number of years. His name was withdrawn in favor of Dr. Charles Kuehne, of Jersey City, who was elected to that office.

Dr. Joseph F. Autenreith, of Jersey City, was elected as Treasurer. Dr. Andrew Sherk, of Newark, Dr. Joseph Nayles, of Jersey City, Dr. Elmore R. Mercer, of Montclair, and Dr. Matthew A. Pierce, of Paterson, were re-elected as the Board of Censors.

D. J. S. Sutcliffe, of Middletown, N. Y., read a very interesting paper on "Hernia," and also one on "Rumenotomy." He spoke of several interesting cases which came under his observation. He was tendered a vote of thanks.

The Society adjourned, to meet at Jersey City on November 1st, 1888.

After adjourning the members held their annual banquet, which was well attended.

Charles Kuehne, Ph.G., D.V.S., *Secretary.*

CONNECTICUT VETERINARY MEDICAL ASSOCIATION.

A regular meeting was held at the Gentlemen's Driving Club Rooms, Hartford, on Tuesday, March 6th.

The following members were present: Messrs. Gardner, Hyde, Parkinson, Tuttle, Tibbals, Bridges and Beckley.

Mr. D. W. Thrall, State Agent of the Humane Society, and Mr. James H. Parker, President of the Gentlemen's Driving Club, were also present by invitation.

In the absence of the President, Vice-Presidents and the Secretary, Dr. Bridges was appointed Chairman and Dr. Beckley Secretary.

The subject of Glanders and the proper methods for its extermination was freely discussed, Messrs. Thrall and Parker participating.

It was hoped that the Humane Society would push this matter of glanders legislation and have a suitable law enacted giving them full control in such cases.

Mr. Thrall said it was utterly impossible for the Society to handle the matter, as it would necessitate the appointment of a special officer and greatly increase their expenses, which rightfully belong to the State; but he promised to give us all the support that lay in his power in bringing about a suitable legislative enactment.

It was voted that the meeting adjourn to the 20th day of March, and be held in the same rooms, at 7:30 in the evening.

The adjourned meeting was held at the time and place specified, and the following members responded to roll call: President E. A. McLellan, Messrs. Sturges, Gardner, Hyde, Bridges and Bland.

The subject of the previous meeting was discussed at great length, and resulted in the appointment of a committee composed of Messrs. Gardner, Sullivan and Bland.

The said committee being instructed to write to the different State Veterinarians and ascertain what authority is vested in them specially relating to glanders. Also to draft a suitable law to present for consideration at next meeting.

The following resolutions on the death of one of our esteemed members, Dr. A. L. Brown, were unanimously adopted:

Whereas, This Association has sustained a loss by the death of one of its members, Dr. A. L. Brown, therefore

Resolved, That our profession in this State has lost a useful, an honored and a respected member, one who was faithful to every duty and was in the highest degree deserving our consideration and our regard.

Resolved, That we shall ever cherish his memory, as a man worthy of his profession, worthy of the admiration of his associates, and worthy of our lasting remembrance.

Resolved, That these resolutions be entered upon our minutes, and an engrossed copy forwarded to his family.

The meeting closed with a promise from the Secretary to read a short paper at next meeting on "Canine Distemper."

THOS. BLAND, *Secretary*.

The last meeting of this Association was held at the Scovill House, Waterbury, on Tuesday, the 5th day of June, the President, Dr. E. A. McLellan, in the chair.

Present—Messrs. Ross, Parkinson, Sturges, Tuttle, Gardner, Bridges, Hyde, Beckley and Bland.

Communications were read from Prof. Liautard and Dr. A. M. Farrington, acting Chief of the Bureau of Animal Industry. There was also a very lengthy and finely written communication from Dr. Nathan Tibbals, of New Haven, on the subject of "Glanders." The committee on glanders legislation was not prepared to make a report, but promised to do so at next meeting.

Dr. Bridges proposed the name of Dr. A. C. Hexhamer, of Stamford, for membership.

The following gentlemen were elected to office for the ensuing year: President—Julian E. Gardner. 1st Vice-President—A. D. Sturges. 2d Vice-President—Geo. Bridges. Secretary—Thomas Bland. Treasurer—Nathan Tibbals. Messrs. E. C. Ross, Andrew Hyde, E. A. McLellan, E. M. Beckley and A. A. Tuttle, Censors.

Thomas Bland read a paper on "Canine Distemper," which was duly discussed.

Dr. Bridges will read a paper on "Parturient Apoplexy" at next meeting, which will be held on Tuesday, the 4th day of September, in New Haven.

THOS. BLAND, *Secretary.*

OHIO STATE VETERINARY ASSOCIATION.

The semi-annual meeting was held in the Cincinnati Music Verein Hall at Cincinnati, July 26th.

The meeting was called to order at 11:15 A. M. by the President, Dr. J. S. Butler, who made a few appropriate remarks.

Twenty-five members answered roll call. The minutes of the previous meeting were read and approved.

The name of E. H. Shepard was proposed for membership, and being a graduate he was unanimously accepted.

Dr. Derr, of Sidney, then read an essay on "Azoturia," and Dr. J. C. Meyer, Sr., one on "Antifebrin." Dr. Fair, of Berlin, read a paper reporting some cases of pleuro-pneumonia in horses which came under his observation.

Dr. J. S. Butler referred to a case of tuberculosis in an eleven-months-old calf, whose lungs weighed 32 pounds; also to an enlarged spleen of a horse, the organ weighing 55 pounds.

Dr. Meyer, Sr., referred to a similar case in which the spleen weighed 79 pounds.

Dr. J. S. Butler also reported the result of his investigation of maladie du coit in Illinois.

The above subjects were discussed, most of those present taking part in the discussion.

The constitution and by-laws were so revised that none but graduates from a recognized college can be admitted into the Association. It was also arranged that the annual meeting hereafter shall be held at Columbus.

Drs. Derr and Meyer were requested by the Association to send a copy of their papers to the AMERICAN VETERINARY REVIEW and *Journal of Comparative Medicine and Surgery*, for publication.

The meeting then adjourned, after which the members dined together, spending a pleasant time.

G. W. BUTLER, *Corresponding Secretary.*

AMERICAN VETERINARY REVIEW,

OCTOBER, 1888.

EDITORIAL.

To our Readers.—Conception of the American Veterinary Review—its incubation, birth, nursing and rearing—its growth and object—necessity of a larger circulation—means to obtain it—the subscription reduced from four to three dollars a year. United States Veterinary Medical Association.—Its organization at the Astor House in 1863—the quarter of a century anniversary in 1888—the meeting at the Rossmore Hotel—but few of the original members present—about forty out of nearly two hundred of the actual membership answer the call—meeting good when compared with preceding ones in New York—two good papers read, but not discussed—the committee on tuberculosis—the meetings in New York always failures when compared with others—a remedy wanted. Legislation and Medical Education.—The paper of the counsel of New York State and County Medical Societies—veterinary medicine ignored—an oversight, certainly—veterinarians ought to appeal for an equality of consideration in the matter. Antifebrine or Acetanilid.—Dr. J. C. Meyer's, Sr., paper before the Ohio State Veterinary Medical Association—a good example that veterinarians ought to follow. Antirabic Inoculation of Dogs.—The discovery of Prof. Galtier—Pasteur's method has too many difficulties for its application—the recent investigation at Pasteur's laboratory—dogs can also be inoculated the same way that herbivorous animals are—simple mode of preparation of the vaccine matter.

To Our Readers.—Without specifying with precision the period of the conception of the American Veterinary Review, we are still able to fix accurately the date and the occasion of the parturient effort which terminated the season of its incubation. This occurred not many years ago, in Philadelphia, at one of the meetings of the United States Veterinary Medical Association, Professor C. P. Lyman being the officiating obstetrician, and the writer being entrusted with the responsibility of nursing and rearing the expected bantling—a task which, in the peculiar condition in which we were then placed, was likely to prove anything but a light one, but which we nevertheless accepted. Perhaps we assumed too confidently and innocently that our desire to acquit ourselves satisfactorily would be held as an equivalent of the ability to do so, and trusted too largely for the approval of our contemplated labors to the good nature of our future readers. However this may be, we unhesitatingly consented to the burden, and whether our wisdom has been vindicated or our unwisdom exposed in the outcome, we have succeeded in nearly attaining the close of our twelfth volume, with what measure of credit can best be determined by those who have by this time become old acquaintances of the REVIEW.

The improvement of veterinary practice and the elevation of our professional standards being held prominently in view, the enlargement of our circulation now becomes an obvious necessity, and in order to meet this we have determined to effect the change in our terms of publication of which we have given intimations on previous occasions, and which we trust will secure the fulfillment of the desired result.

Our aim is to secure a *good circulation*, to avoid the accumulation of *bad debts*—and why should any man, needing and enjoying the aid and good counsel of this, or any other periodical, ever defer a single annual payment?—and, if it becomes inevitable, *a little yearly surplus!* (which we mention with an admiration mark.) Without the fulfillment of these conditions, the REVIEW will lack much of its efficiency as a means of the advancement and improvement of veterinary science. A large circulation is one of the indispensable needs of the case, and our terms have been readjusted accordingly, the change to take place with the conclusion of the present volume.

We announce, therefore, that beginning with the first number of the thirteenth volume, which will be the April number for 1889, the subscription price of the REVIEW will be, for veterinary practitioners $3.00, and for veterinary and medical students $2.00 per annum, payable invariably in advance.

United States Veterinary Medical Association.—Twenty-five years ago, on the third Tuesday of September, 1863, a large body of gentlemen met in the rooms of what was then the great New York hotel, the Astor House, and organized the United States Veterinary Medical Association. They supplemented their good day's work by meeting together to partake of such a sumptuous dinner as the Astor House was then and has continued to be famous for serving.

On the 19th of September, 1888, the same association again met in the rooms of the Rossmore Hotel and spent a day similar, in respect to the work done, to many others of which the history has been recorded for some years past, the members once more holding a supplementary meeting around the table of feasting, and doing honor to a splendid collation.

In 1863 all was activity, movement, discussion, anticipation and hope. Something like sixty members were present, and the dinner also was a lively event, it was such a grand result for the veterinarians of America which it commemorated, and such an epoch in their history.

The meeting of 1888 was remarkable for its quietness, its somnolence—in fact, the torpid condition which seemed to prevail and to affect the forty members, or thereabouts, present, and from which nothing could rouse them. At this meeting but three members were present of the number of those whose names had been signed on the roll of 1863—so few of them remain after an interval of twenty-five years. Since the first date, however, large accessions have been made to the membership of the Association, and the roll at the present time contains nearly two hundred names. Yet but forty of these were present, and among this number only a little over half a dozen were residents of the city of New York, the remainder of the assemblage being made up by members of the Bureau of Animal Industry, together with veterinarians from Massachusetts, New Jersey, Pennsylvania, Connecticut, Rhode Island, Virginia, Maryland, Ohio, Nebraska, Maine, New York State, South Carolina, etc.

It is, however, a pleasure to record the fact that although the meeting was not such a gathering as ought to be expected from an association a quarter of a century old, yet it was probably an occasion of more interest than its last predecessor, held in the same place. If some little time was needlessly lost (which was literally the fact) in the early session, after the reading of the reports of the various committees, the afternoon session, though unfortunately a short one, was made interesting by the excellent papers read by Professor Huidekoper and our esteemed friend Dr. J. C. Meyer, Sr. The most important action of the meeting was, we believe, the disposition made of the suggestions of Drs. L. McLean and Liautard, to delegate a committee to the meeting of the American Medical Association in order to call the attention of that body to the prevalence of tuberculosis in the United States, and to suggest means of guarding against its dangers.

The United States Veterinary Medical Association, without question, contains within itself all the necessary elements of usefulness, and possesses ample power for the achievement of active progress in its sphere of operation, and there is no good reason why the record of its anniversary meetings should show such a lack of valuable and successful research and performance.

If the annual meetings in New York cannot provide matters of as much interest as the semi-annual gatherings in Boston, Philadelphia and Baltimore bring forward, and they ought to do more, let the officers try to discover the cause and suggest a remedy. If necessary, let it be even an heroic one, such as a *change in the place of the regular anniversary meeting.* While this would no doubt be regretted by nearly all, yet it should be done rather than suffer the members to lose entirely what little interest they may still retain in the repute and existence of our only national veterinary organization.

The next semi-annual meeting will be held in Boston at the usual time—the third Tuesday in March

Legislation and Medical Education.—The *Medical Record* of September 15th, in an article in its editorial columns, calls the attention of its readers to a paper read before the Health Department of the American Social Science Association by the able counsel of the New York State and County Medical Societies, Mr. W. A. Purrington, relating to the important subject of legislation as an aid to medical education. In these remarks of our worthy contemporary, and in his recapitulation of the various ways in which legislation may prove effective for good, we notice what we feel justified in calling a very reprehensible omission or intentional ignoring of the very important specialty of veterinary medicine, a branch of the science which has made such exceptional progress in the last few years. If legislation is necessary and helpful when designed to aid physicians, dentists, pharmacists or even accoucheurs, certainly no good reason can be alleged for conniving at the ignorance of the veterinarian, by leaving him unaided and excluded. So far from this, and notwithstanding the advances made in late years in veterinary schools, and their comparative excellence, they are far from being above needed improvements and regulations. We cannot suppose that Mr. Purrington omitted the veterinary profession from his paper because he considered it unworthy of the connection which we claim for it. We suppose rather that he was laboring under such misinformation as has led him to the erroneous supposition that our veterinary schools are all that they ought to be, and are above the need of help—a great mistake indeed. Veterinarians ought not to remain ignorant of such movements as that which may be now inaugurated in accordance with Mr. Purrington's paper; and through him and the medical press they should appeal for such an equality of treatment for their specialty as should secure for it such legislative sanction and control as are enjoyed by the physician, the dentist or the pharmacist.

Antifebrine or Acetanilid.—We print on another page a paper which was read by our friend and correspondent, Dr. J. C. Meyer, Sr., of Cincinnati, at the late meeting of the Ohio State Veterinary Medical Association, which from the importance of the subject and the ability of its treatment must have been listened to with much interest by the members of the Association and have elicited much profitable discussion. The subject is the effects of antifebrine, a comparatively new addition to therapeutics, and one which in the hands of the veterinarian cannot fail to prove a useful and valuable curative agent.

Dr. Meyer related his own experience with the new drug, and seemed to be satisfied with the results which have thus far followed its employment in his hands. There is, however, something in this act of Dr. Meyer's which none of us should fail to remember, appreciate and imitate. To promote and advance the interests of our profession there is something demanded beyond the mere careful and correct performance of our professional duties, and the course of Dr. Meyer in presenting this report of his experiments with antifebrine is one that should be studied and imitated by those of our confreres who, unlike him, may be inclined to allow a nihilistic spirit to interfere with the better observance of the higher professional ethics. The pages of the Review are never closed to any whose desire it may be to follow Dr. Meyer in the path of professional duty which he has thus indicated, in giving without reserve the results of his experience for the benefit of the profession at large, and consequently the general good. It is the true method of elevating and advancing the higher law of the healing art.

Antirabic Inoculation of Dogs.—Our September number contained a reference to the prophylaxy of rabies in herbivorous animals, and the expression of our hopes that the ready mode of treatment of Professor Galtier would soon find extensive application at the hands of veterinarians. At the same time we could not but regret that carnivorous animals, and dogs principally, could not be subjected to the same treatment, and that the Pasteur method, with its difficulties of proper serial preparations, was the only one to which bitten dogs could be submitted, and that this treatment was so far the only positive one by which immunity could be secured.

The difficulties that are encountered in the preparation of the series of spinal cords, as conducted by Pasteur, the easy possibility of errors, and the uncertainties offered by the whole process could not have escaped the attention of those who have labored assiduously for years on the same line of research, and they must have felt keenly stimulated by the competition which they have encountered from the many laudably ambitious aspirants who have sought success and honor in a field of achievement so glorious and philanthropic.

A communication from Mr. Pasteur before the Academy of Sciences now seems to point out the probability of the discovery of a means of attenuating the virus by which the inoculation of a dog may be made to confer certain immunity upon that animal. On this occasion Pasteur reports that on the 16th of November, 1887, fifteen centimetres in length of the marrow of a rabbit of the 171st series, which had died rabid, was after exposure for forty-eight hours to a temperature of 35°, diluted in 30 cubic centimetres of sterilized bouillon, and that two dogs, trephined, and inoculated with this solution did not become rabid; *a fact which shows the greatest probability, if not the certainty, that this marrow, by treating it by the contact of pure and dry air, had lost its virulency in all its length.*

And yet these two dogs had gained immunity. Inoculated by trephining, more than six months later, with the bulb of a dog which had died from an attack of furious rabies, these animals resisted the operation, and are now alive and well.

Heated marrow, deprived of its virulency, had become vaccinal by a chemical vaccine. Should this be confirmed by other experiments, how simplified would be the prophylaxy of rabies in carnivorous animals, and especially in dogs.

ORIGINAL ARTICLES.

MALADIE DU COIT.

By W. L. Williams, V.S.

Report on the outbreak in Illinois to the State Board of Live Stock Commissioners.

Gentlemen:—I herewith submit my report upon the outbreak of equine syphilis, maladie du coit, or malignant venereal disease of solipeds, which has been lately brought to notice in De Witt County, Illinois.

This being the first well authenticated outbreak of this disease, so far as known, in any English speaking country, renders a thoroughly complete and accurate report both difficult and desirable; the English veterinary literature upon this subject being practically all translations from foreign languages and in most cases very meagre in detail and inaccurate in many important particulars. From such as exist, however, I have not hesitated to draw freely whatever seemed of value, and acknowledge with pleasure the assistance derived from Dr. Fleming's very able and exhaustive treatise in his "Veterinary Sanitary Science and Police," from which, although differing radically from him in some important particulars, I have not hesitated to copy or condense the general history of the disease and his table of synonyms, and in nearly every part of the work have freely drawn whatever seemed of value to my purpose.

I acknowledge also with pleasure many kind and valuable suggestions regarding the work by Prof. Law and Dr. Casewell.

SYNONYMS.—Technical: *Lus venerea equis*, *Framboesia morbus pustulosus*, etc. French: *Maladie du coit*, *maladie vénérienne des solipedes*, *maladie paralytique du cheval*, *paralysie epizoötique*, *paraplegie epizoötique*, *morve de l' appareil de la generation*, etc. German: *Exzemansschlag*, *chankerkrankheit*, *gutartige beschälkrankheit*, *bosartige beschälkrankheit*, *pseudo-syphilis*, etc. Arabic: *El dourine*, *dourine* (Fleming.)

HISTORY AND GEOGRAPHICAL DISTRIBUTION.

The earliest account of the disease known is that by the German veterinarian Ammon, who witnessed it in 1796 and 1799 amongst stallions and mares in Trakehnen, North Prussia, where it persisted until 1801 and reappeared six years later; but the disease was probably known at a much earlier date in southern Russia. It appeared in Austria in 1815 and in Hanover in 1816, where it spread and prevailed until 1820–21. In 1821 it appeared in Syria and Silesia, reappearing in the latter country in 1826.

From 1827 to 1830 it caused great mortality in Bohemia, and in 1830 the disease appeared in Berne, Switzerland. From 1833 to 1836 the disease raged in upper Silesia and again in the same province in 1840–41. Horse breeders had now become so thoroughly alarmed that careful investigation by veterinarians and severe legislative enactments soon checked the ravages of the disease in Germany.

In 1847 Signol saw the disease in Algeria, where it caused a loss of six hundred horses, and other writers mention the occasional appearance of the disease in the North African States.

In the spring of 1851 the disease broke out for the first time in France, in 31 communes around Tarbes, containing 1,874 mares, and out of 750 mares bred to government stallions 100 became diseased, and an additional 27 mares became diseased by private stallions; 52 of the affected mares died, and the disease almost entirely disappeared during the following year, only to reappear in 1856, 1857, 1858 and 1861. The disease was directly traced to stallions imported from infected countries in 1851 and 1861.

"This is, so far as I can trace it, the geographical limit of this curious disease. It has not been witnessed as yet in England, Belgium, Italy, Spain or Denmark, nor in countries beyond Europe, Asia or Africa, so far as I am aware, but there can be no doubt but that if diseased stallions or mares are imported to those regions now exempted from its effects, it will appear there as it has done in Russia, where it is frequent and violent, particularly in the southern governments—Germany, Hungary, Bohemia and France." The above history, abbreviated or quoted from Fleming, demonstrates to some extent the serious nature of the malady, the probably source of the disease in America, and the importance of dealing with it in a prompt and decisive manner.

THE HISTORY OF THE DISEASE IN DE WITT COUNTY, ILLINOIS, and its source of origin, was for a long time somewhat obscure but now seems reasonably clear. Three sources of origin have been suggested. 1st, It was supposed that the disease was introduced direct from France, by Harrold & Culbertson, of Wapella, in January, 1884, when they imported 19 French draft stallions, aged from 18 to 30 months, all of good quality and showing no evident sign of disease.

In 1884 one died from injuries in transit and three were sold, which, so far as can be learned, remained free from the disease. In 1885 one died from unknown cause and one was sold to parties who in turn sold him to W. R. Carle of Wapella (No. VIII,)* and two, (XII and XIII) were sold to Foley & Seniff, of Wapella.

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* Numbers refer to tabulated list of affected and exposed stallions and mares.

In 1886 two horses died, one probably of venereal disease, the other from unknown causes, and two were sold to California parties, which are reported well.

In 1887 there remained seven horses, six of which were used on the Harrold & Culbertson farm and all badly diseased, while the seventh horse was used for stud purposes at Danvers, Ill., and remains sound.

In April, 1884, Harrold & Culbertson brought from Texas 236 select western horses, about 170 of which were pregnant mares, which afterwards dropped and reared healthy foals.

These mares were then bred promiscuously to such stallions as were on hand in the years 1884 and 1885; nearly all the mares were impregnated and dropped healthy foals, which remain on the farm. In addition to these mares, the stallions were allowed to serve such outside mares as were offered. No signs of disease were noticed in 1884, but in 1885 it would appear that at least one outside mare and probably a few on the farm, developed the disease, but being wholly unheard of and unexpected, no special notice was taken of it until the spring of 1886, when the disease assumed such alarming proportions in both mares and stallions, that all breeding was discontinued on the Harrold & Culbertson farm. The objections to this theory of origin are, 1st, the stallions were too young to have been used extensively for stud purposes and hence unlikely to have been affected prior to importation; 2d, with the exception of VIII, XII and XIII, which were kept in the neighborhood, all stallions sold from the farm have, so far as known, remained healthy; 3d, they made the season of 1884, serving promiscuously a large number of mares, without producing the disease, and again in 1885 without affecting a sufficient number of mares to cause alarm.

A second theory of origin is by means of Texas mares, either from having been affected upon their arrival or generating the disease spontaneously by haphazard copulation.

Spontaneous origin being wholly unknown in other specific contagious diseases and the past history of equine syphilis in other countries, where it has always been traced to the importation of breeding animals from an affected district, should prove sufficient to dismiss the idea of spontaneity, while the fact that the disease, so far as can be learned, is wholly unknown in Texas, and that all Texas mares brought to De Witt County were doubtless well until after being bred to affected stallions, should set at rest this theory of origin.

The third and most tangible theory is that the disease was introduced direct from France, by the imported brown "Moore" horse (No. XV.), now owned by J. Fisher, Clinton, Ill., imported in 1882 by Benson & Knapp, Monticello, Ill., at the age of three years, sold in spring of 1883 to Moore & Son, Clinton, Ill., and by them was placed in the stud near Clinton, serving a large number of mares besides those belonging to his owners, a fair percentage of which became impregnated and dropped healthy foals. In 1884 he was continued for a time in the stud without any complaint from patrons, but before the season was far advanced the horse became unwell. The genital organs became swollen and the penis sore in several places. At the ring of the penis (preputial ring) there was sufficient ulceration to destroy the ring at the front part. At the upper part of each flank there were extensive ulcerating sores, which healed tardily, leaving large unsightly scars. On the left side of the crest of the neck there appears a very plain brand, of the letters D N, which I am reliably informed by Prof. Law and Dr. P. Paquin, unmistakably indicates that this horse had been condemned by the French veterinary authorities for maladie du coit. The horse was sold some time after the development of the symptoms of disease, for a merely nominal sum, as a seriously diseased stallion, to his present owners, after having been taken from the stud and treated for his malady with indifferent results, and in 1886 and 1887 the horse's services were offered to owners of mares, but only a limited patronage was obtained. Nothing particularly farther was thought of the matter until the disease broke out in alarming proportions and inquiry was instituted to determine its origin, when it was learned that in 1883 Milton Chapin bred two black mares to the Moore horse and disposed of one to Sandusky Wilson, and the two mares were bred in 1884 to Utopia (XII) before he was sold to Foley & Seniff. It is now said that one or both of these mares were affected with equine syphilis when bred to Utopia, and that they had contracted the disease from the Moore horse in 1883. Certain it is, that the Wilson mare was bred to the Moore horse in 1883 and to Utopia in 1884, and that she was seriously diseased in 1884, undoubtedly of equine syphilis, partially recovered, was sold to a Mr. Yakle of Waynesville, Ill., and by him to an unknown shipper. The other Chapin mare was traded to itinerant horse-traders and was soon lost sight of, but being at that time twenty years old or more it is probable that she is ere this dead.

Returning then to Utopia, after having served the Chapin and Wilson mares, he was kept in stud by Harrold & Culbertson, serving among others the "Marvel" mare (No. 383), and was sold apparently sound in March, 1885, to Foley & Seniff, and proving unequal to the demand, Black Brilliant (XIII) was purchased of Harrold & Culbertson to assist, and he proving unsatisfactory was exchanged June, 1886, for Perie (III).

During the summer of 1885 Utopia served about sixty mares without, so far as learned, diseasing any, and in the fall of 1885 he served some twenty mares, of which a few proved in foal, while some fifteen of them became affected, nine of which have died, and the others have mostly partially recovered, some of them scarcely showing any trace of the disease.

Here matters were allowed to rest apparently quiet until early in April, 1886, when the disease had assumed such alarming proportions in Wilson township that Messrs. Foley & Seniff asked me to see their stallions and some of the affected mares and advise with them as to the proper course to pursue. I examined six or eight mares affected since the fall of 1885, all exhibiting the constitutional symptoms of the disease as hereafter described.

The two stallions were carefully examined. Black Brilliant (XIII) appearing perfectly sound, and Utopia (XII) well except a slight swelling and redness of the urethral opening in penis and a slight dirty-brownish watery discharge from the urethra, which might occur in any stallion without attracting special notice. Not being fully aware of the extremely insidious, misleading and serious nature of the disease with which I had to cope, and hoping that the disease could be successfully confined to its then apparent narrow scope, I advised that Utopia should be withdrawn from the stud until all symptoms of disease should disappear, prescribed such treatment as I thought best for both mares and stallion, and as the other stallion (Black Brilliant) exhibited no signs of disease, I advised that he be continued in the stud. The affected animals apparently improved for a time and I saw them once more in April, at which time I made some immaterial changes in the treatment, and here my personal observation of the disease ended until renewed by your directions in May of the present year. My second visit in April, 1886, brought me to a more full realization of the dangers to our horse breeding interests from this disease, and accordingly I reported the matter briefly to you under date of May 1, 1886.

Verbal reports of the spread of the disease in De Witt County reached me occasionally during the summer and fall of 1886, until early in 1887 the accounts became so alarming that I reported the matter more fully to you and urged decisive action.

Returning to the Harrold & Culbertson farm at the date of sale of Utopia to Foley & Seniff, it seems that Utopia previous to his sale had infected some mares wtthout attracting the attention of the owners, which in their turn transmitted the disease to other stallions and thus the malady continued to spread, unobserved in 1884, suspected in the autumn of 1885, and asserting itself positively in 1886.

The totally unknown and unsuspected nature of the affection, with its long periods of incubation, latency and want of such pronounced symptoms in its earlier stages as we usually expect in a deadly contagious disease, readily allowed it to gain a disastrous hold unobserved or at least unrecognized.

Previous to the general recognition of the dangerous character of the disease the usual traffic in horses went on uninterrupted, so that a number of exposed mares and certainly two or three diseased mares were disposed of ere the public was aware, but fortunately it seems that only a very few of actually diseased mares changed hands, and nearly all of these have been found and safely quarantined, and the others traced to dealers' hands, from whence in all probability they went to our large cities or northern pineries for draft work, where they are not likely to ever again be bred. But some of the affected mares were unfortunately bred to neighboring healthy stallions, and in this way the disease was communicated to XVIII by a mare bred early in 1886 to XII–XIII by Henry Bell of Wilson township and to XVII by a mare bred by N. Foley in fall of 1885 to XII–XIII and afterwards sold to Kelly & Waters, and by them bred to XVII in 1886 and 1887. Were it possible to trace the history of every affected animal, we would doubtless find all cases emanating from one source of origin, and from the evidence now at hand it would seem that the most probable source of origin of the present outbreak is the Moore horse (XV.) Bearing in mind the history of the disease in the old world, we would naturally look to some imported animal for our source of infection, and since practically the only horses we import from a country known to be infected are those from France, we would consequently expect to trace the disease either directly or indirectly to that country.

Character.—There exists almost as many definitions for equine syphilis as there are different writers upon the subject.

The name maladie du coit signifies merely that it is a disease contracted by copulation, while in fact there is at least one other venereal affection of solipeds (horse, ass, etc.), which might as properly be termed maladie du coit as this disease.

English writers translating from German, French, and other foreign languages, refer to a benignant and a malignant form of the disease, but from my experience with venereal diseases of horses in the past, as well as from observations in the present outbreak, I am obliged to take exception to the generally accepted ideas of English writers and translators, and separate the so-called benign form from the disease under consideration as a wholly distinct venereal disorder, the reason for which I shall more fully allude to later, and we therefore prefer to discard the term maladie du coit and follow the nomenclature of writers of human medicine, denominating the fatal constitutional disease under consideration, equine syphilis, resembling closely as it does the syphilis of man, and applying the name equine chancre, or chancroid, to the benign, local, eruptive, venereal disorder which closely resembles the soft or non-syphilitic chancre or chancroid of man in many of its characteristics. From the above standpoint, then, equine syphilis may be defined as a malignant, specific venereal disease, peculiar to solipeds.

The nature of the disease is not thoroughly understood, some believing it to be a neurotic (nervous) affection, while others, noting the very common changes in the lymphatics, designate it a lymphatico-nervous disease, etc. Others, relying on some similarity of symptoms and pathological changes, believe it identical with or closely allied to human syphilis. But the mercurial treatment so efficacious in the syphilis of man seems inert in this disease; the symptoms of the two disorders, while resembling each other in some respects, yet differ widely in many very essential particulars, and furthermore, carefully conducted experiments of Horand and Peuch of Lyons, demonstrate that human syphilis is not transmissible to solipeds.

"Without entering, then, into any further discussion of the views entertained with regard to the nature of the disease, we may at once aver that no definite conclusion can be arrived at, and we must be content with the statement that it is an eminently virulent malady of a specific nature, generally marked at first by local signs and subsequently by constitutional derangement of a grave character" (Fleming).

To be continued.

ANTIFEBRIN OR ACETANILID.

By J. C. Meyer, Sr., V.S.

(A paper read before the Ohio State Veterinary Medical Association at Cincinnati.

In the perusal of a trans-atlantic journal, the *Repertorium*, founded by the late Prof. Hering, and at present edited by Prof. Vogel in Stuttgart, my eye fell upon an article entitled "Antifebrin or Acetanilid," written by L. Hoffmann, Instructor at the Veterinary Institution at Stuttgart. This paper is worthy of further circulation.

Undoubtedly all of you gentlemen have heard of, and, perhaps, have already made use of this new febrifuge; still I trust a report on this theme from another source will be acceptable.

Hoffmann says: "In No. 33 des Central-blatters für klinische Medizin, Cahn & Hepp drew attention to a new antifebrile, four times stronger than antipyrin, thus far always reliable, having no unpleasant, much less toxical secondary effects.

"Stachiwitz, in the *allgemeinen medizinischen Zeitschrift*, No. 93, 1886, then drew attention to the fact, that 0.25 centigramms antifebrin is as efficient as 1 gramm antipyrin, and very much cheaper.

"At the time of these publications the clinical department of this institution was receiving a number of horses afflicted with influenza, having a high fever. A good percentage of these patients were treated with antifebrin with satisfactory results. Further experiments, especially with dogs and pigeons, proved that the remedy has not, as yet failed, nor caused any unfavorable after results. Therefore, I am now prepared to recommend acetanilid as one of the best, if not the best antifebrile agent.

"This preparation, which is very stable, is not decomposed on distillation, nor by means of acid and alkalies at normal temperature; it is almost insoluble in cold water, somewhat in hot water, and in alcohol, or in any fluids containing alcohol it is readily dissolved. It melts at 113° and boils at 293°.

"The experiments by Ansorow have shown that antifebrin, like thallin, operates on the regulating centres of warmth, and excites the vaso-dilatatores, so that the first symptom is a dilatation of the peripheric vessels, and a slight increase of the peripheric temperature; symptoms which can be reduced without fail, by an irritation of the nervus Ischiadicus.

"In regard to the decomposition of antifebrin in the system, Wendriner states that it is not found in the urine as antifebrin, nor as anilin, but considerable phenols are detected, about two to three per cent. of the quantity taken. What becomes of the other decomposed parts has not as yet been ascertained; probably they are emitted from the system as acetate of ammonia.

"Upon experimenting with antifebrin on animals, it was subsequently employed in the human being, and from the numerous (nearly 200) compiled reports, I have the following to cite concerning its action: This remedy never fails to reduce the temperature of such suffering with fever, and of all the applications made, thus far known, there has been but one instance in which the temperature did not fall, but in this case, thallin also had no effect.

"The dose for human beings is 0.25 centi. to 0.1 decigr. Its action is more than twice as powerful as that of antipyrin or thallin. It has no disagreeable secondary effects. The temperature is more rapidly and lastingly reduced in the decrescent stage than when the disease is at its acme. The lowering of the temperature sets in two or three hours after its introduction into the system, and continues from three to five hours, then, at first a slow, later a rapid increase follows in the acme stage until it has reached the original height or over.

"In the decrescent stage it never reaches the old height of temperature again.

"In typhus, the temperature could not be kept down permanently, by giving antifebrin in oft repeated doses.

"According to Kowacs and other observers, antifebrin reduces the pulse and the pressure of the blood; Krueger, however, disputes this.

"The dreaded after-effects of other fever-allaying expedients, such as profuse perspiration, vomiting, chills, collapse, etc., are not manifested in the use of antifebrin. Slight chills (though very seldom,) frequent, but agreeable perspiration and diurese are met with. The stomach retains antifebrin very well, though according to Hinzelman, it operates equally well if brought high up in the rectum, from whence the action is speedier (after one hour) if the dose be of the same strength.

"In the treatment of wounds, Krueger regards antifebrin as a most powerful disinfectant, applied in the form of powder, or dissolved in ether or collodium, or in gauze.

"Riese claims to have observed a specific action in polyarthritis.

Fürbringer has administered it as high as 6 gramm into the blood vessel of dogs and continued this large dose for seven days, before indication of poisoning set in; these appeared as paralytic manifestation, weakness of the hind part, syncope, cramp and death.

"Reckoning the weight of the body on the kilo, the death dose for a human being would be 30 gm.; 0.25 to 0.5 already act antifebrile. Oft-repeated smaller doses cannot be recommended, inasmuch as such scattered doses are entirely lost in the organism. Using this article in the clinic on animals, I found as a rule the above accounts substantiated.

"Certainly the results in our domestic animals cannot always be established, the information as to the subjective feelings being wanting, and slight after-affects overlooked.

"The supposition that since it requires 0.25 centi. to 0.5 decigramm antifebrin to generate antifebrile action in a human being weighing 140 pounds, 5 to 10 gramm would be necessary for a horse weighing 1,000 pounds, has been proven incorrect. A horse requires much larger doses if the expedient is to act as an antifebrile. 20 to 25 gm. doses were very often effectual. 30 gm. are most reliable. 100 gm. were administered to an anatomical subject in one day without result. Frequently it was given with digitalis and small doses of calomel.

"In all instances the action of antifebrin set in. In a few cases, when the result was not wholly satisfactory, it was shown that the medicine was not administered properly. In animals at death's door, the lowering of the temperature was traceable for a short time, to a slight degree.

"The value of the expedient lies solely in its antifebrile action. As long as the fever is reduced, the patients feel better. However, according to my experience, it is not a specific against fever-creating causes."

Gentlemen, the above account prompted me to give this remarkable agent a trial, and in many cases in which a lowering of the temperature was desired I gave the antifebrin and in the main points I found Dr. Hoffmann's statement verified; in fact, I observed, after administering the remedy, especially in enzootic pleuro-pneumonia, considerable sudation in some patients, in others a profuse micturition took place—secretions which promise wholesome alterations in subjects prone to hydrothorax. At any rate I have not as yet noticed, whilst these phenomena were prominent, that a unilateral pneumonia terminated in a bilateral one. It may be stated right here, that during this last hot season the majority of my bilateral cases (sporadic) turned into gangrene in spite of antifebrin and every other available remedy.

Should the effect of antifebrin extend no further than to check the pyreticosis for some hours, this temporary relief certainly is a most welcome pause to every fever sufferer. The contented look, the inclination to accept some nourishment, often noticed in the remittent state, are evidences of a comfortable feeling, and are not to be underrated. I am inclined to believe that this remedy was conducive to the recovery of more than one of my patients.

In addition to the antifebrin, I give a compound of fld. extr. verat. vivid., as mentioned in the article on "Equine Pleuro-Pneumonia," recorded in Vol. VIII of the Review.

The following specifications will illustrate my experience with antifebrin in a few of my cases:

No. 1.—A bay horse, 6 years old, weight 1,400 lbs., with pneumonia, unilateral.

March 20th.—Respiration, 32; pulse, 72; temperature, 106°. Respiratory function of right lobe diminished, which changed to an occult state until the 25th, when the patient's condition appeared favorable.

March 26th, A. M.—Respiration, 16; pulse, 60; temperature, 104°.

March 27th, A. M.—Respiration, 28; pulse, 66; temperature, 105°. Thus it will be seen that the three cardinal symptoms are again aggravated. Antifebrin ℥ i was administered.

March 27th, 7 P. M.—Respiration, 24; pulse, 56; temperature, 102°.

March 28th, A. M.—Respiration, 22; pulse, 72; temperature, 104°. Left lobe still intact, coughs freely, and has some appetite; symptoms which are indicative of improvement, hence the antifebrin was not repeated.

March 29th.—Respiration, 18; pulse, 52; temperature, $100\frac{1}{5}°$.

No. 2.—A black horse, 5 years old, fat, weighing 1,500 lbs., with pneumonia.

March 31st.—Respiration, 30; pulse, 72; temperature $105\frac{3}{5}°$. Schneiderian membrane hyperæmic, a profuse yellowish discharge from nostrils; attempt at, and suppression of cough, refuses all nourishment.

April 1st, 9 A. M.—Respiration, 32; pulse, 72; temperature, $105\frac{3}{5}$. Antifebrin.

April 1st, 6 P. M.—Respiration, 40, pulse, 64, temperature, $102\frac{2}{5}°$. Becoming thirsty and urinating freely.

April 2d, 11 A. M.—Respiration, 28; pulse, 72; temperature, $105\frac{2}{5}°$. Coughs often, dry; air circulates through both lobes, though not so perceptibly through the right. Antifebrin.

April 2d, 6 P. M.—Respiration, 28; pulse, 58, temperature $102\frac{3}{5}°$.

April 3d, A. M.—Respiration, 20; pulse, 60; temperature, $103\frac{4}{5}°$. Cough dry, micturation copious, vesicular murmur of right lung inaudible.

April 4th, A. M.—Respiration, 20; pulse, 56; temperature, $102\frac{1}{5}°$. Discharge of a whitish mucus; right vesicular murmur slightly audible; drinks water with flour; no appetite, micturation diminished.

April 5th, A. M.—Respiration, 40; pulse, 50; temperature, $102\frac{1}{5}°$. From now on the appetite gradually improved, and by the 10th was convalescent.

No. 3.—A livery horse, 9 years old, nourished moderately, weight 1,100 lbs. Sporadic pneumonia, bilateral.

April 7th.—Respiration, 40; pulse, 72; temperature, 103°. Administered verat. virid. comp. with tinct. digitalis, and continued with this until the 9th without result, when antifebrin was given.

April 10th.—Respiration, 36; pulse, 68; temperature, 104°. Antifebrin pill.

April 11th.—Dead,

No. 4.—A grey horse, weight 1,350 lbs; with pulmonary fever, following a neglected catarrh of several days standing.

April 15th.—Respiration, 16; pulse, 72; temperature, 107⅕° Schneiderian membrane highly inflamed, discharge from nostrils; vesicular functions in both lobes rather increased, cough hesitating.

April 16th.—Respiration, 14; pulse, 64; temperature, 105°. Condition not much altered, appetite wanting, drinks often, but small quantities.

April 18th.—Respiration, 16; pulse, 60; temperature, 105°.

April 19th.—Respiration, 16; pulse, 60; temperature, 105⅕°. Condition same, except that he is inclined to lie down occasionally since yesterday.

April 20th.—Respiration, 24; pulse, 60; temperature, 105⅕°. Cough hoarse, dung soft; gave antifebrin at 1 o'clock.

April 21st.—Respiration, 20; pulse, 60; temperature, 104⅘°. Cough hoarse, left lung infiltrated; antifebrin at noon.

April 22d.—Respiration, 20; pulse, 50; temperature, 101°.

April 23.—Respiration, 14; pulse, 48; temperature, 101°. appetite returning, recovery rapid.

No. 5.—A grey horse, weight 1,400 to 1,500 lbs.

May 20th.—Arrived in the city at noon after thirty-six hours railroad travel. Has pulmonary hyperæmia. Head pendulous, one-half hour afterward commenced to shiver, circulation slightly accelerated, respiration triple. Verat. virid. comp. was given at 2 o'clock, and repeated at 4 o'clock. Application of mustard water on the costal region.

May 20th, 6 P. M.—Respiration, 80; pulse, 80; temperature, 106°. Lies flat; repeated the mustard bath and gave a hypodermic injection of morphia.

May 20th, 7 P. M.—Verat. virid. comp. Rectal injection of chilled water.

May 20th, 8 P. M.—Respiration, 60; pulse, 94; temperature, 105°. Venesection, one gallon of blood not very melanæmic. Rectal injection of cold water. Antifebrin.

May 21st, 7 A. M.—Respiration, 60; pulse, 66; temperature, 101.° Ate a bran mash.

May 21st, 2 P. M.—Temperature, 104°. Rectal injection and one hour later an antifebrin pill.

May 22d, 8 A. M.—Respiration, 24; pulse, 52; temperature, 103$\frac{2}{5}$°. Drinks moderately, indifferent to food, but appears more lively.

May 22d, 10 A. M.—Antifebrin pills; one-half hour later had chills which lasted about one-half hour.

May 22d, 6 P. M.—Respiration, 28; pulse, 40; temperature, 100°. Ate a good ration of mash, urinates freely, has an occasional vigorous loose cough.

May 23d, A. M.—Respiration, 28; pulse, 48; temperature, 103$\frac{3}{5}$. Antifebrin.

May 24th, A. M.—Respiration, 26; pulse, 48; temperature, 102°.

May 25th, A. M.—Respiration, 20; pulse, 44; temperature, 101°. Appetite fair.

May 26th, 10 A. M.—Respiration, 40; pulse, 60; temperature, 102°. Ate breakfast eagerly, but the groom gave him a bucket and a half of water to drink. Is shivering.

May 26th, 11 A. M.—Antifebrin pills.

May 27th, A. M.—Respiration, 40; pulse, 62; temperature, 102$\frac{4}{5}$°. Vesicular murmur of the lower third of the right lobe is diminished. Dung in solid balls. Appetite poor. Antifebrin.

May 27th, 8 P. M.—Respiration, 32; pulse, 50; temperature, 102$\frac{2}{5}$°. Reported to have had colicky pains late in the afternoon, but after a few alimentary evacuations felt relieved.

From now until the 30th he made a good recovery.

I am well aware that our capability to regulate this disease is limited; still the little should not be left undone. The old principle "there is no effect without a cause" will not yet allow me to step over to Nihilism, which seems to be growing in favor.

SHEEP DISEASES: THEIR CAUSES, NATURE AND PREVENTION.*

By Thomas Walley, M.R.C.V.S.

(*Continued from page* 266.)

Indirect Predisposing and Exciting Causes of Disease.

Having glanced over direct, we may now with profit consider those indirect influences which act as predisposing or exciting causes to the development of disease, and one of the most important of these is *the management of the land and of feeding.* Seeing that the growth of animals and vegetables moves in a circle, and that both derive their nourishment primarily from the earth, it follows that the earth must contain, in order for their vigorous growth, all the elements they require and that those elements must bear, as I have already remarked in reference to the blood, a certain definite proportion to each other.

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* Transactions of the Highland and Agricultural Society of Scotland.

Now it is quite clear that if the stockowner year by year takes from the land the important constituents of all organic growth by putting animals thereon and allowing them to devour the vegetable products and then devouring the animals himself or selling them to someone else to devour, the land must ultimately become impoverished: he cannot eat his cake and have it too.

It may be held that much of the material taken from the land is returned again to it in the shape of urine and dung, but, allowing that this is so, what about the yearly deficit produced by the removal of immense quantities of material in the shape of mutton, blood, horn, skin, wool, &c.? Then it may be said that the air and the rain supply vegetables with nitrogen and carbon. Granted, again, that this is so, what proportion of soluble matter, especially on hillsides, is washed out of the soil by rain?

The heather may be burned, but by doing so much of its nutrient matter is dissipated in the form of gas, which is largely carried away by the wind and benefits the neighboring fields; or, if in close proximity to the sea, the fishes mayhap. Certainly the ash of the heather contains a small quantity of potash and other salts which are thus restored to the grass; that is all, however—no nitrogen, no carbon. It would, I know, be simply absurd on my part to tell the stockowner, as I have heard of some people doing, to restore to his hill pastures, in the form of manures, that which he annually takes out of them. As a rule he has not the means to do so, and if he had, the task of manuring a thousand acres of hill would be a Herculean one indeed; but the farmer may give the poor impoverished land, or the best patches of it, something in the shape of lime to supply materials for the bones of the animals grazing on it, and salt to supply soda to the serum of their blood; and if he cannot dress all the patches in one year he can dress them in rotation: I do not say dress the whole area of the hill pastures on a farm. There are hundreds of acres on which, by virtue of the absence of a matrix in the form of soil, manurial agents would be absolutely thrown away, but it is a poor hill on which there are not a few fertile spots—a few oases in the desert—and these are often the life of animals depastured on them. I will even go farther and say that some few such spots may be worth the expense of a little bone and a few pounds of good grass seeds. I have known a few hills, where it has been practicable, converted into a mine of wealth to sheep farmers by breaking them up and re-seeding; and it must be borne in mind that the good effect of improvements is not confined to the areas on which they are carried out, but that it extends around the borders of those areas by virtue of the improved manure (dung) from the sheep themselves.

Assuming, moreover, that circumstances will not allow of the carrying out of these plans, cattle can be depastured on some of the hills or parts thereof and a supply of artificial foods or dried natural foods be given to them; or, the same thing can be done with sheep instead of always taking them to the lowlands. I have known barren hills converted into fertile ones by this means; and, more, I have known diseases, such as "louping-ill" and "braxy," disappear from spots they loved to haunt, if I may use such an expression; and only a short time ago Mr. Fletcher Menzies related to me, when conversing with him on this subject, a very instructive instance of the conversion of a death-dealing hill into a healthy pasture in this way. I will also ask if there is anything to prevent the farmer from adding some of the necessary elements of the animal body to the artificial and dry foods in the shape of salt, magnesia (as Epsom salts); potash (as kainite or sulphate); and iron—as green vitriol? Two of these agents—salt and iron—not only destroy the germs of disease but the embryos of parasites also, while the others stimulate the digestive organs and kidneys to healthy action. All are cheap; and even if animals did not utilise all they took in they would return it to the soil in the urine and fæces. Iron is not likely to be conveyed to hills in any form, seeing that there are no roads or streets over them and consequently no tires of wheels or horseshoes to be worn away; neither is there any old iron lying about to rust.

I do not wish it to be concluded from what I have just said that I am an advocate for heavy manuring—far from it. I could relate dozens of instances of the injurious effects of such a system, but will only quote one or two. I have already directed attention to the effects of over-manuring swedes and turnips, and, as a striking illustration of my argument, I may point out that the application of large quantities of nitrate of soda to pasture land is a frequent cause of diabetes and weed in horses feeding on the grass or clover grown thereon, even when these are made into hay; and in my own practice I have frequently told my clients that their horses were fed on such grass or hay (though I knew nothing at the time of the district from which it had been brought) and subsequent inquiry has proved the correctness of my conclusions.

Neither animals nor vegetables can be said to be in a really healthy state if they are over-forced. Wheat grown on a dunghill frequently fails to attain maturity. Turnips grown with excess of stimulants, especially nitrates, decay or decompose early. Near Edinburgh lately, turnips grown with manure were sold at £14, those with nitrates at £8 per acre, the dairymen averring that the latter do not keep. Mutton grown on ling and heather is sweeter and more satisfying than is the mutton of trough or manger-fed sheep.

I am quite aware that I may be told—and I have been so told—that I am laboring under a mistake; that plants will not take up excessive quantities of salts. If this were so, why do we see diabetes and weed when nitrate of soda is used in excess? and how is it that when sheep and cattle are fed on turnips and grass grown with a liberal supply of superphosphates or even of lime, the quantity of lime salts passed off by the urine is so great that concretions are formed in the bladder of the sheep which block up the worm-like appendage at the end of the penis and, if not removed, cause death by retention of urine? In bullocks, the lime salts form concretions round the hairs at the end of the sheath which often imprison the urine and cause death by mortification of the sheath and surrounding tissues, or by blood-poisoning. Professor Johnstone analysed turnips grown with guano and farmyard manure respectfully, and found that the ash of the former contained 19.39 per cent. of phosphoric acid, as against 7.73 per cent. in that of the latter.

Now, as excess of manure is injurious so its judicious application may be highly beneficial. Thus I have known diseases, such as "red-water," "braxy" and "anthrax" entirely disappear from pastures in which they had become, as it were, indigenous, by the application of lime, phosphates, or salt.

For all practical purposes, the best manures for the farmer are organic manures, if they can be got in sufficient quantity and *if put on the land before undergoing decomposition.* A man may delight in watching his laborers cut through the manure heap as they would through a mass of butter, but it must be remembered that such material has lost much of its most valuable constituents; its gases have been dissipated in the form of stench and its salts washed out by rain.

I will give one practical illustration of the difference between natural and artificial manures on sheep. During his lifetime my father never purchased, to my knowledge, an ounce of artificial manure other than Peruvian guano and occasionally lime and salt, and no man ever profited more by his sheep; but after his death the modern bailiff went in largely for artificials in the proper acceptation of the term and, figuratively speaking, the land became covered with the carcasses of sheep which had been "struck," *i.e.*, that died from *black leg* or similar affections.

In reference to supplementary foods, putting aside hay, I think there is nothing better than oats—crushed in preference—bran, crushed linseed and ground malt; and in reference to the latter it must be borne in mind that, independently of its nutrient properties, it assists very largely the digestive processes and its dust contains a fair percentage of potash. Of late half-malted barley has grown in the favor of some feeders, and particular attention has recently been directed to its value by Mr. J. Shaw, of Walkington Towers Farm, Beverley, in the *Leeds Mercury:*—

"Since the malt duty was removed every farmer can make malt for himself, free from all restrictions, and the cost to him of making it is a nominal one.

"Formerly, very much was thought of malt as a feed for all stock, and it is especially good for cows, as they will upon it, with bran and other food, produce plenty of rich sweet milk all the winter through. Sheep, beasts, and horses all thrive and fatten upon a mixture of it and other foods, but of late years it has not been much used, as its cost has been higher than other feeders.

"Malt is termed green when the roots and stem of the barley, from which it is made, are sufficiently grown for it to be put upon the kiln to be dried. It is also at this stage of its growth that it is of the most value as a feeder, it being found that the green malt gives better feeding results than dried malt, and, as I will show later on, every farmer can easily make this sort of malt himself almost without any manufacturing cost.

"As I have already said, the general use of green malt has been curtailed by its comparative expensiveness, but this objection does not exist at the present. There is no better barley for making this malt from than that imported from Russia, being less liable to mould; and, singular to say, this sort of barley has never before been so plentiful nor so cheap as it is at the present time—in fact, it can be got at the chief ports at 6d. per stone, or £4 per ton, which is below the price of hay, undecorticated cotton cakes, and bran—in fact, feeding barley is at present more than 1¼d. to 1½d. per stone, or £1 per ton, cheaper than maize, and is not very much higher in price than straw is in some parts of the country.

"No doubt this unprecedented cheapness of feeding barley will cause it to be used largely in its unconverted state, either unground or ground into meal, along with turnips and other food, but I prefer it when converted into green malt, and for the benefit of those farmers who are inclined to follow my example in this respect, I may say that the process of conversion is as follows:—

"The barley must first be steeped overhead in water (allowing it room to swell) about forty-eight hours, and this can be done in any tank or large tub or casks which may be available (the latter can also be bought of any cooper for a few shillings each), into which a large plug-hole should be made at the side, as near the bottom as possible, and over the inside of the plug-hole should be fixed some perforated zinc (which can be got at any ironmonger's), so that when the plug is taken out, the water may be drained off through the zinc and plug-hole, and the barley left behind. It is a good plan to let the perforated zinc enclose a larger space than is occupied by the plug-hole, so as to let the water drain to it more quickly.

"When the barley has been steeped forty-eight hours, and the water drawn off, place it thickly upon a floor, say two feet thick, and let it remain there until some warmth is developed; it must then be thinned down to, say, 6 inches, and must be daily turned over until it strikes out its roots. As soon as these have grown a little, and show signs of withering, they should be sprinkled with a watering can, and the turning continued until the acrospire—or what would be the stalk if the barley were planted—has forced its way well up to the back of the barley under the skin. When this is accomplished, the barley has been converted into green malt, and is at the stage of manufacture which is of most value to the farmer for feeding purposes. The whole operation from first wetting till ready for use will occupy from ten to twelve days.

"As regards the floor for growing the barley upon, a concrete one is the best, but either brick or wood will do; only, in the latter case, more moisture will have to be added whilst the barley is upon it. A wooden floor may also be cheaply covered with galvanized iron sheets, and is then even better than a concrete floor.

"It follows that the quantity steeped or wetted every forty-eight hours should be calculated according to what is required for two days' consumption; and any farmer who may wish for further information respecting the process can, no doubt, obtain it from his nearest neighboring malster.

"Mr. W. J. Harris, of High Hampton, Devon, has lately contributed a long article to the newspapers (of which a copy appeared in the *Mark Lane Express* of August 22), giving calculations showing that the deficiency in this year's crops of oats, hay, turnips, and straw amounts to 14,600,000 tons, and this estimate is also concurred in by other authorities. Mr. Harris further calculates that this deficiency can be made up by using 12,000,000 qrs. of feeding barley, and it is certainly fortunate for us that this article is at present cheaper than all other feeding corn, and that it can be bought at as low a price as hay and undecorticated cotton-seed cakes.

"In case a good fall of rain should now cause a sharp growth of succulent grass, it will be found advantageous to give dry barley to stock to prevent scour."

In recommending the above materials I do not wish it to be assumed that I underrate the value of other feeding stuffs. Far from it; all are good in their proper place and in proper quantities. Maize, for instance, is rich in heat-producing; beans, peas and wheat, in flesh-forming matters; and the three latter contain a tolerable quantity of potash also; and I cannot comprehend why sheep farmers do not cultivate, more than they now do, such crops as thousand-headed and other cabbage which could be readily conveyed to the poorer lands, or in the case of the thousand-headed cabbage eaten off in rotation. I must, however, deprecate the *injudicious allowance* of such materials to sheep, and, above all things, I abhor undecorticated cotton cake. I will here give one instance, out of many which have come under my observation, of the astounding ignorance which prevails in reference to the admixture and allowance of feeding stuffs. In the spring of this year I was consulted, by letter, about the death of a large number of sheep in Lincolnshire. After describing the symptoms presented by the animals, my correspondent went on to say, "The food of the sheep is as follows:—Waterloo cake, cotton cake, oats, maize, swedes (cut up). They run on grass land, which is a dry layer, and *have as much of the above food as they can eat;* I may say they are pushed, and are very fat," and well they might be, and no wonder that on making the post-mortem examination my correspondent found "the bladder distended with urine and inflamed, and containing calcareous matter in its interior; the lungs congested and the kidneys flabby and degenerated."

The deductions I would draw from the foregoing observations for the guidance of the stockowner are—1st, That he cannot over-force sheep without suffering the penalty in the shape of a large percentage of deaths, and in great waste of material; 2d, That all sudden changes of management are injurious in the extreme. Judicious changing of food and pasturage should always be practised and, where it can be done, the resources of his own holding should be supplemented by the farmer from the superabundance of his neighbors; *sheep require change more frequently than do other animals.* I have already referred to my father's management of his sheep. No man prepared more sheep for the butcher, in proportion to the size of his farm, than he; but they were scattered in lots all over the country side and frequently changed, and when put on to fresh turnips they were limited as to quantity, particularly at the outset, and here I may remark that in turnip feeding there is often more food wasted and fouled than is made use of; 3d, I would say to the stockowner, *let your feeding be as natural as possible; don't waste your substance in buying everybody's celebrated compositions, but purchase the raw materials and make your own mixtures; then you know what you are giving to your sheep, and you are not "paying through the nose," by purchasing stuff which in many instances is not worth the price paid for it by* 20 *or* 30 *per cent.*

In-breeding is a predisposing cause to disease, at least in a relative point of view or outside certain limits, and those limits are regulated by the vigor or otherwise of the animals engaged. Where the male and female are alike vigorous and structurally perfect the evil effects of in-breeding may be postponed; but even here, if it is carried too far, defects will crop up and they will increase rather than diminish in each succeeding generation. A diffusion of fresh blood is a good thing in more senses than one, and he who neglects Nature's demands in this respect must be prepared to pay the penalty. A plan adopted by Mr. Fletcher Menzies is, I think, an exceedingly simple and good one. It is based on the well-known fact that sheep depastured on large tracts of land do not wander very far a-field, but confine themselves to comparatively limited areas; and consists in shifting the rams to fresh tracts every two or three years; thus, given three rams placed at three different points one year, they are so interchanged in location each succeeding year that at the end of the third year each section of the flock has been served by a different ram.

Exhaustion of Males.—In no case should a ram be asked to do more than he is capable of doing in this respect, for if he is overtaxed the breeder must be prepared for the consequences in the shape of uncertain crops and weakly lambs.

Exposure to cold and wet is both a predisposing and exciting cause of disease; and of all the different kinds of cold, that dependent upon east winds is the most depressing to animals, and the most inimical to the growth of vegetables: of the east wind it may be said, that

> Desiccate itself,
> It shrivels up and dries the membranes,
> Drives back the stream of blood
> And blanches hand and cheek
> Of all who are exposed
> Unto its baneful power.
> Extended is its influence
> E'en to vegetation. The young
> Green shoots in one short night
> Are withered, crisped and browned,
> Till not a semblance lives
> Of their identity.

Yes, this is one of the banes of the flockmaster and the most disheartening of foes to the shepherd who has in the early spring been watching the growth of the young grass in some specially favored spot and has been calculating what a nice bite he will shortly have for his lambs and ewes; but, too often in one short night his hopes are dissipated, and in place of seeing his lambs thriving he picks them up cramped and stiffened, and in a few days is mortified by seeing them die from louping-ill, swung-back (paralysis), joint-ill, or so called navel-ill.

Cold and wet are especially injurious to parturient sheep and newly-born lambs; and, if possible, lambing ewes should always be placed in dry situations; or, if practicable, housed either by night or by day, or both, according to circumstances: and I would particularly impress the fact upon all breeders, that if the system of an animal is depressed by debilitating and lowering influences it only requires that some existing cause such as this shall come into operation to call a latent disease into existence: it is "the last straw that breaks the camel's back." Low forms of inflammation and congestion of the lungs, bronchitis especially, are induced by cold and wet in all animals whose systems are debilitated or whose blood is poor.

Parturition is a prolific predisposing and exciting cause of disease, as at this period of an animal's life there is a stage of great excitement followed by a corresponding degree of depression: but, in addition, there is a large quantity of waste matter to be got rid of from the womb, and the system has to regain its original state; and all this at the expense of the constitution.

There are many agencies of an adverse character against which an animal would successfully do battle under ordinary circumstances, that overcome the vital energy when depressed by the lowering influences of parturition; especially is the system incapable of fighting against the effects of putrefactive (septic) organisms or their products, and the former lodging in the unhealthy fluids in the womb—which form a favorable pabulum for their growth—easily gain access to the circulation through tissues weakened by being supplied with impure or impoverished blood; the result is blood poisoning (septicæmia), septic inflammation of the womb, of the bowels, or of the udder, and death not only of the mother, but of the lamb; the latter giving evidence also of septic inflammation of the umbilical vessels (naval-ill), and putrefactive diseases of the joints, much of which may be prevented by tying the cord at birth and by applying an antiseptic thereto.

Not only during the rutting season, but onwards through the period of lamb-bearing, at the time of parturition and in the subsequent nursing, is great care in management demanded and a sufficiency of nourishing food required in order to prevent loss and disappointment.

Excitement is up to a certain point good for all animals, but there are few in which it may with greater ease be pushed to excess than in the sheep; it is especially to be guarded against in the case of in-lamb ewes, as it is frequently an exciting cause to the development of latent disease and often causes premature birth.

Fatigue, *clipping* and *exposure* to *cold wind* (a *chill*) induce congestion of the lungs.

Age.—Young animals are peculiarly predisposed to diseases depending upon rapid tissue changes for their production; and old animals to diseases of a debilitating or asthentic character, hence the large percentage of deaths in the old "crocks" at lambing time.*

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* While it is impossible that I can deal at length with every individval disease of this class, I may briefly refer to joint-ill, navel-ill, and lambing or milk fever.

Joint-ill, except as a purely sporadic affection, is always due to a combination of two sets of causes—first, to a depraved or impoverished condition of the blood of the mother (nearly always in my experience brought about by injudicious management) and in consequence of which the milk contracts deleterious properties; second, to the combined effects of cold and wet. In some cases the actual cause is inflammation of the umbilical vein, as a result of which abscesses form in the liver and supperative inflammation of the joints (pyæmia) follows. Judging from the clinical characters and course of the disease we are warranted in the conclusion that the actual cause is a micro-organism—a micrococcus probably.

Navel-ill or *navel-pocking* is the result, in the first place, of a depraved condition of the mother's system; and, in the second place, to the action of septic germs on the clot of blood which is always formed in the umbilical vein of newly-born animals. If the system is healthy no injurious influence is exerted by septic organisms; if the contrary, the altered blood acts as a splendid pabulum for their development—septic (or sometimes erysipelatous) inflammation is set up, the products of which become absorbed and set up putrefactive inflammation of the joints, particularly those of the hind limbs; but in some cases the inflammatory action extends along the cellular tissue to the fore legs in a forward direction, and to the abdomen, thighs and hind legs in a backward direction, the involved parts quickly becoming of a black or purple hue from mortification. Both in joint-ill and in navel-ill the condition of the blood of the mother should be improved and

To summarize the remarks I have so far made I may say that all diseases which have their origin in an altered state of the blood—and such form the vast majority of the diseases from which sheep suffer—may be arranged under four heads.

1. Those marked by *deficiency in the quantity of blood*, or of certain important elements thereof, and especially diminution of its red cells (*anœmia*), in which debility is the marked feature, and in which blood medicines (phosphates, iron, and cod-liver oil) are required.

2. Those marked by *excess of the normal elements of the blood*, either of its fat-forming or flesh-producing materials, or both (*hyperœmia*), and in which congestion, inflammation and hemorrhage are apt to occur in one or more of the important organs of the body, as the liver, lungs, and intestines; and in which some exciting cause, such as cold, is alone required to determine an attack: in these, depletives (as bleeding with laxative and saline alteratives) are required.

3. *Impoverishment and degradation of the blood* (*spanœmia*) the degraded matter being passed out by the glands of the bowels, producing *diarrhœa* or *dysentery;* or by the kidneys, producing *albuminous or bloody urine or diabetes;* in which

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the navel-string of the lamb should be tied with a silk or cotton ligature and thoroughly dressed with some antiseptic lotion or liniment immediately after birth.

Lambing Fever.—Septic or erysipelatous inflammation of the womb (metritis) has its origin also, in the vast majority of instances, in a depraved condition of the blood. In some instances the affection is undoubtedly due to the local access of septic germs by the contaminated skin of the hand of the shepherd, by wounds, or by retention and subsequent decomposition of the after-birth. But, while I make this acknowledgment, I cannot too strongly express the opinion that in most cases the disease is primarily of systemic origin, and this is proved by the fact that its progress can generally be arrested by the adoption of judicious alterative treatment, by the fact that when the disease is prevalent amongst ewes, their lambs are the subjects of joint-ill and navel-ill, and by the further fact that the udder is frequently the seat of septic or erysipelatous inflammation; and, after death, by the existence of effusions and extravasations into the various tissues of the body.

Notwithstanding that I hold this opinion, I must insist upon the necessity of the application of some antiseptic lubricating agent to the hands and arms of shepherds engaged in delivering ewes, as also to the passage (vagina) of the ewes after delivery, *i. e.*, when artificial aid is required, or the ewes are unhealthy.

dropsies are of frequent occurrence (as in *water-braxy*), and in which blood medicines, restoratives and alteratives, are required.

4. *A depraved condition of the blood*, usually due to the action of putrefactive germs producing blood poisoning (*toxicæmia*); marked by rapid effusions of water and blood into the system and rapid putrefaction, as in *stinking ill* or *red braxy;* and in which medicines are of little use, though antiseptics and stimulants may be given.

(*To be continued.*)

SNAKE BITE AND ITS ANTIDOTE.—III.

EXPERIMENTS WITH CROTALUS VENOM AND REPUTED ANTIDOTES, WITH NOTES ON THE SALIVA OF HELODERMA ("GILA MONSTER.")

By H. C. Yarrow, M.D., Curator Dept. Reptiles, U. S. National Museum.

(*From Forest and Stream*).

(*Continued from page* 275.)

Let us now examine the testimony of others as to the efficacy of the permanganate as an antidote to serpent venom. The first to repeat de Lacerda's experiments was his former assistant Dr. Couty, who declared in the *Compt. Rend. Acad. des Sc.*, Par., 1882, April 24, that the permanganate was not an antidote, and that a favorable opinion upon its merits should be reserved until further experiments had been tried.

M. Vulpian, in *Compt. Rend. Acad. des Sc.*, Par., 1882, March 6, 613, states that he endeavored to repeat de Lacerda's experiments with the permanganate of potash and had come to the conclusion that an intravenous injection of some centigrammes of permanganate can have no influence upon venom after it has been taken up by the circulation, particularly as it is decomposed after a few instants, and in case an effective dose be given, death might result from the antidote. In fact he says it is difficult to explain how the bites of *Bothrops* were cured in Brazil by the permanganate unless such bites are not always mortal. In his *resumé* he says there can be no doubt but that the permanganate can only be useful after recent bites, for if one or several hours elapse no antidotal effects can be produced. He also states that it would be wrong to rely upon this drug in cases of bites of other venomous reptiles in which the bites are often, or more rapidly, mortal.

Dr. G. Badaloni reports in the *Lancet*, *London*, 1883, I., 768, that from his experiments with the permanganate he is led to believe it is of no avail in cases of poisoning from viper bite. Mr. Vincent Richards, of Calcutta, who used permanganate in a great number of experiments regarding its antidotal power over the cobra venom, has reached the following conclusion:

I. "That in dogs no appreciable symptoms of cobra poisoning followed by the hypodermic or intravenous injection of a watery solution of from two to seven centigrammes of cobra poison, when previously mixed with from one to three decigrammes of permanganate of potash, though, under ordinary circumstances, such quantities hypodermically injected are more than sufficient to produce fatal results." This statement simply proves that the salt renders the poison inert when mixed together in a vessel, not in the body of an animal, and our own experiments show a similar condition.

II. "That when similar quantities of a watery solution of cobra poison were hypodermically injected into dogs and were followed either immediately or after an interval of four minutes (the longest interval I have yet sufficiently tested), by the hypodermic injection with the same part of a watery solution of permanganate of potash (one to six decigrammes) no appreciable symptom of cobra poisoning resulted." This experience of Mr. Richards differs entirely in its result from ours, as is shown by the notes given above.

III. "That when glycerine was used instead of water, to dissolve the dried cobra poison, the permanganate of potash appeared to have no power over the virulence of the virus." This statement, it is thought, has been disproved by our own experiments already related.

IV. "That after the development of symptoms of cobra poisoning the injection of permanganate of potash, whether hypodermic or intravenous, or both, failed to exercise any influence upon the symptoms."

V. "That permanganate of potassa possesses no prophylactic properties, since death followed the hypodermic injection of $3\frac{1}{2}$ centigrammes of cobra poison in watery solution in the case of a dog which had been hypodermically injected a few hours previously with 8 decigrammes of the agent in solution."

VI. "That it would appear to be absolutely necessary that the permanganate to be efficacious should come into actual contact with the cobra poison."

VII. "That although no symptoms of cobra poisoning followed the injection of cobra poison and permanganate of potash, sloughing of the part injected sometimes followed." Sloughing we found to be extremely rare in our cases, as will be seen from the notes, in fact a 5 per cent. solution of the permanganate injected several times into the leg of a rabbit had no appreciable effect.

VIII. "That up to the present time it has never been experimentally shown that any agent has either the power to neutralize the cobra poison lying in the tissues, nor to prevent death when four minutes had elapsed from the time of injection of the poison to that of treatment."

IX. "That if permanganate of potash has such power to destroy so subtle a poison as that of the cobra, it is probable that the hypodermic injection of the agent in the bite of a rabid animal would destroy the virus which causes that terrible disease, hydrophobia."

The writer would remark that as early as 1870 he treated three cases of persons bitten by rabid animals with applications of a solution of permanganate of potassa after incision of the bites had been performed; none of the patients had *rabies canina.*

Sir Joseph Fayrer states in his address to the Medical Society of London, speaking of Richards' views, as follows: "I agree with Richards that so far as it goes it is a good local application and as such ought to be used; or, in its absence, tannic acid or *liquor potassæ* might be resorted to with the same object; but as a constitutional remedy, as a physiological antidote, it is powerless, like all others that have been tried and failed to do good."

Dr. de Lacerda himself, although he attributes the highest value to it as a chemical antidote, both as a powerful oxidizing agent and by the action of the potash, says, as to the idea of finding a physiological antidote for snake poisoning: "I entirely agree with you that it is a Utopia; although I found that *liquor potassæ* practically answered the same purpose as permanganate of potash, it did not decompose the venom, but merely destroyed the tissues in which the venom was lying, thereby preventing its absorption; and it was subsequently discharged with the slough. This was proved by the fact that when the venom and *liquor potassæ* were mixed and injected subcutaneously, no constitutional effect followed; but if the same mixture was diluted with water and injected into a vein or into the peritoneal cavity of an animal, symptoms of cobra poisoning were soon manifest, and the animal died."

As opposed to the opinion of the persons quoted, we have on the affirmative side of the question only de Lacerda's statements and cases, and one or two others. The first is mentioned by Dr. de Fourier in the *Journal de Hygiène* for Sept. 22, 1882, in which a case is mentioned of an individual having been bitten by a very large serpent supposed to be poisonous, to whom a solution of the permanganate was given internally and hypodermic injections were also employed; the patient recovered. Another case is related by Dr. E. Bories, in the *Polyclinic*, *Philadelphia*, 1883, I., 57, in which the patient was bitten by a rattlesnake. Four hours after the bite one-half grain of permanganate of potash was injected subcutaneously and two grains were given internally every hour. Ammonia was applied to the wound and the patient recovered.

Before leaving the subject of the permanganate, it may be well to state de Lacerda's hypothesis of the action of this salt as he himself communicates it in a letter to Dr. Fayrer: "Passing now to the essential part of the discussion that took place in the Medical Society, I will give in a few words how I comprehend and how I judge that the efficacious effect of permanganate of potash should be comprehended. You yourself, by experiments made in 1869, recognized that permanganate of potash mixed with the venom took from it its noxious properties. Certain conditions of the experiments led you, however, to deny the efficacy of this chemical agent in the cases in which the venom had been inoculated in the tissues. As you know, however, I have demonstrated by numerous experiments and innumerable clinical facts that the neutralization takes place even in the midst of the tissues, which makes this substance a chemical antidote of great value. The permanganate of potash acts upon the venom, destroying it in two ways: first as a powerful oxidizing agent, second by the potash that forms the base of the salt, passing a current of nascent oxygen through a concentrated solution of the venom, which loses entirely its noxious properties. This experiment, which I have repeated many times, gave me always the same result. Let us suppose now, that an individual is bitten. If injections are made in the place of the bite from five to ten minutes after the inoculation of the venom, this is promptly neutralized *in situ* and the individual runs no further danger. A great number of facts have been observed like this in Brazil. If aid is given late, hours after the bite, when the tumefaction of the wounded part is very pronounced and the phenomena that indicate the entrance of the venom into the circulation have already declared themselves, injections repeated in various parts of the wounded members parting from the wounds made by the fangs of the reptiles still give very good results. Nor is it difficult to explain the good results in this case. The venom, as I have said, acts first locally and only enters the general circulation after the lapse of a certain time, and by portions. The permanganate of potash meeting in the tissues with the venom, which is little by little diffusing itself, neutralizes it in the various points when it has been diffused and thus stops the source of supply. The entrance of new and successive portions of the venom into the general circulation being thus impeded, the organism takes charge of the elimination of what has already been introduced and which was insufficient to compromise the life of the individual."

It is only fair to add that the poison of the *Bothrops* is much less venomous apparently than that of the cobra and *Crotalus*, and this may account for the good results obtained by Dr. de Lacerda, but we should not forget also that Mitchell makes the statement that at least seven-eighths of patients (bitten by the

Crotalus) recover, and that the mere fact of their surviving can assuredly be no test of the value of any particular form of treatment.

Dr. E. R. Sisson, of New Bedford, Mass., sends to the Tampa (Fla.) *Journal* this report of his successful treatment of a dog bitten by a rattlesnake:

"On March 1 my pointer Joe wss bitten by a rattlesnake. It being my custom, while hunting in Florida, to go prepared for an emergency of this kind, and being present at the time of the accident, I lost no time in applying the treatment.

"First, I pressed the wound to make it bleed as freely as possible; then I sucked it; after this applied five drops concentrated spirits of ammonia to the open wound, immediately following by ten drops of the fluid extract of jaborandi hypodermically, holding it in the puncture for two minutes. After making these local applications to destroy the action of the poison on the blood, I gave 1 oz. of whiskey with a drop of the ammonia internally every hour. After this, stopped the ammonia and gave whiskey and milk; six ounces of milk to six teaspoonsful of whiskey, decreasing gradually the whiskey for the first twenty-four hours, as the circulation and strength improved, when I stopped it altogether, and gave 6 oz. of beef tea, making the tea of Liebig's extract, usual strength, alternately with the same quantity of milk, once in six hours. This course was followed for sixty hours, when the animal voluntarily took small pieces of fresh beef. From this time on his improvement has been continual, having hunted the dog twice within the last three days, with all his usual vigor, and no loss in the strength of his nose.

"This is my first experience in the treatment of a rattlesnake bite, and I give it to sportsmen for what it is worth.

"No treatment, in my opinion, will amount to much in such a case, where the circulation is involved, unless applied immediately and continued regularly for at least seventy hours or more, with rest and freedom from all excitement.

E. R. Sisson, M. D."

Dr. Yarrow advises us that Lieut.-Com. William P. Randall, U. S. Navy, also vouches for the above.

FIRST INTERNATIONAL CONGRESS ON TUBERCULOSIS.

SYNOPSIS OF THE QUESTIONS TREATED.

FIRST.—*Of the dangers resulting from the use of meat and milk of tuberculous animals and means to prevent them.*

Mr. Arloing proposed a vote on the following conclusions:

1. Immediate insertion of tuberculosis amongst the list of contagious diseases.

2. Entire prohibition of the use of the meat of tuberculous animals, until means of rendering it harmless are discovered.

Mr. Nocard said the meat of tuberculous animals may, in some cases, contain elements of danger, but this is the case in but few instances, and even when its use is dangerous it is only in a very limited degree.

Mr. Baillet thought that, First—It is necessary to avoid the consumption of the meat of all subjects in which tuberculosis is generalized and is accompanied with absolute or relative emaciation of the animal. Second—That the entire seizure of the meat is not justifiable in fat animals, or in those in good condition, whose diseased state was not detected during life, except in the cases where the lungs, pleura, glands and all parenchymatous organs show internal tubercular lesions. Third—That in all other cases it is only necessary to abstain from the consumption of such organs as are more or less diseased, with the different glands of these organs and the surrounding muscular structures. Fourth—That any other measures varying from the preceding would have a detrimental effect upon the breeding of animals, the supply of markets and the institution of the services of meat, and such interdiction would be without advantage to public health.

Mr. Butel considered that the meat of tuberculous animals having been experimentally proved to be virulent, and human phthisis not unusually finding its origin in butcher shops, the use of all meat of tuberculous animals ought to be suppressed, this being the only efficacious means, and very different from a mere partial seizure. As for the milk, he believes that dairies ought to be submitted to periodic veterinary inspection, as is done in Holland and Denmark.

Mr. Veyssiere believed that the duties of inspectors ought to be better defined.

Mr. Spillmann contended for a certificate of origin for all animals sold, and for a severe meat inspection with immediate compulsory destruction of all tuberculous individuals.

Mr. Rossignol considered that measures of precaution were excellent, but wished to have them supplemented by the indemnity of the owners.

Mr. Guirand asked for the prohibition of clandestine or concealed slaughtering of animals.

Mr. Maule demanded a close inspection of fowls.

Mr. Aureggio thought that all meat ought to be rejected where the disease was present in any degree, and recommended the indemnity of owners.

The discussion was continued by Messrs. Thomassen, Van Hertsen, Siegen, Robinson and Dionis des Carrieres, who recommended the institution of experiments on convicts condemned to death. Messrs. Degive, Peuch, Larmet, Guinard, also participated, and it was closed by taking a vote on the first motion, viz.: "*It is urgent to carry out by every means, including indemnity to interested parties, the general application of the principle of the entire prohibition and total destruction of all meats coming from tuberculous animals, no matter to what extent the specific lesions may be found.*

This was carried by a large majority.

SECOND.—*The human race, the various animal species, and organic media considered from the point of view of their aptitude to tuberculosis.*

Mr. Degive suggested a mode of preventing the possible dissemination of the disease by vaccination. In Belgium, when the vaccine has been obtained, the animal is killed and inspected before the virus is used.

Mr. Chauveau acknowledged the value of the suggestion, but considered the danger exaggerated on account of the difficulty of inoculating tuberculosis through the hypodermic method.

Mr. De Brun read a communication on "Tuberculosis in Syria."

Mr. Piot stated that tuberculosis is rare in Cairo, but that when occurring, whether in man or animals, it is always rapid in its progress.

Messrs. Chantemesse, Widal, Galtier, Cadeac and Arloing showed that the virulence remains for two months, and even more, in tuberculous baccilli immersed in water.

Mr. Arloing recommended, First—for sick persons who are obliged to eat raw meat the use of that of the sheep or the goat. Second—That those who drink blood should also confine themselves to that of the same animals. Third—That the same blood be used in distilleries for the clarification of wines and liquors.

Communications were presented by Mr. Robinson on "The Tuberculosis of Asia;" by Mr. Solles, on "Heredity in Guinea Pigs;" by Mr. Galtier, on "The Heredity of Animal Tuberculosis;" by Mr. Robeis, on "The Relation Between Lactation and Tuberculosis;" by Messrs. Ferraud and Malvoz, on "The Heredity of the Disease;" by Mr. Agurre, on "Tuberculosis in Chili;" by Mr. Arloing, on "The Inoculation of Animals as an Element of Diagnosis of Human Tuberculosis," with many others, which shed but little light on the great question of the transmission of tuberculosis from animals to man.

Third.—*Ways of introduction and propagation of the tuberculous virus in the economy—Prophylactic measures.*

The following papers were read: Mr. Torkomian: On "The Sequelæ of Inoculation of Tuberculous Virus by an Anatomical Wound. Result—An anatomical tubercle without generalization;" by Mr. Jeannel, on "The Generalization on Experimental Tuberculosis;" by Mr. Tscherning, on "Local Tubercular Infection, observed in a veterinarian who wounded himself in making a post mortem examination—only a local lesion;" by Messrs. Straus and Wurtz, on "The Resistance of Fowls to Tuberculosis by Injection;" by Mr. Petresco, on "Contagion by Sputa;" by Dr. Jacobi, on "The Tuberculosis of the Thymus Gland," and these were followed by numerous others on the subject, establishing the various modes of development of the disease.

Fourth.—*Earlg diagnosis of tuberculosis in man and animals.*

A paper was read by Mr. Espina Y. Capro on "The Early Diagnosis in Man;" by Mr. Arloing, on "The Inoculation of Animals as an Element of Diagnosis of Tuberculosis in its First State;" by Messrs. Verneuil and Clado, on "The Diagnosis of Tuberculous Lesions by Inoculation in the Peritoneum of Cobayes;" by Mr. Cagny, on "The Diagnosis of Tuberculosis in Animals;" who thought the diagnosis easier than it is generally considered to be, especially for phthisis pulmonalis; by Mr. Nocard, who was willing to admit the possibility of a positive diagnosis by physical signs, but believed that it can be made more so by inoculation or the direct examination of the suspicious products. The hypodermic inoculation of the guinea pig is the best method of conducting the examination of the products of the sputa for the baccilus of Koch; Mr. Nocard had found intestinal and even mammary tuberculosis most difficult to diagnosticate in a positive manner.

At the last sitting of the congress four propositions were presented to the meeting and adopted:

1. It is proper to consider as belonging to the province of Boards of Hygiene all questions relating to contagious diseases of domestic animals, including those which, at present, do not seem to be contagious to man. To vaccinia, glanders, hydrophobia, anthrax and tuberculosis, other infectious diseases, occupying a similar common position, may hereafter be added.

2. The motion adopted at the conclusion of the first discussion was amended, on motion of Mr. Laho, to affirm that this recognition of tuberculosis amongst contagious diseases be declared as possessing an international character.

3. It was recommended to have instructions in a simple form distributed in large quantities in cities and country towns, in which should be indicated the means of guarding against the dangers of tuberculous infection through the use of food, and especially of milk, and the method of destroying the virulent germs of the vessels in which sputa of phthisis may be received.

This was amended by Mr. Guinard's proposition that the instructions include linen, clothing and other objects used by phthisic patients.

The propriety was affirmed of subjecting—

4. Milk dairies to special inspection in order to ascertain certainly that the cows are not affected with diseases contagious to man.

The congress adjourned to meet in 1890.

EXTRACTS FROM FOREIGN JOURNALS.

BUCCAL ABSCESS DUE TO THE PRESENCE OF A NEEDLE.

By Mr. Haan.

This accident, which is one of rare occurrence in solipeds, comparatively to what occurs in ruminants, was detected in the exploration of an abscess of the maxillary space. The animal, which had for about two months been affected with a severe attack of angina, had become affected with abundant salivation and experienced great difficulty of mastication. The saliva was mixed with portions of food, and escaped principally from the left commissure. The tongue was swollen and highly colored, and hung out of the mouth; the mucous membrane of the mouth was highly inflamed, and on the left side of the tongue an elongated sore appeared, extending from the frœnum to the second lower molar, the exploration of the parts showing that there was no necrosis or caries of the bone. There was no bad smell from the mouth. The maxillary space was somewhat tumefied, and at first the case was considered as one of simple buccal abscess, and a simple form of treatment prescribed, as seemed to be indicated. On the following day, observing that the saliva was mixed with an abundant flow of pus, of comparatively laudable quality, in order to prevent the possible danger of its collection in the mouth and around the bone, the puncture of the swelling of the maxillary space was performed with the actual cautery. This gave exit to a large collection of reddish pus, more or less concreted, of old formation, and the exploration of the cavity with the finger revealed the presence of a common sewing needle. Ordinary attention to the abscess after the remoral of the cause was followed by rapid recovery.—*Journal de Zootechnie.*

RABIFORM SYMPTOMS IN GASTRITIS OF CATTLE.

By Mr. Detroye.

In order to guard against the possibility of error in the diagnosis of this affection, the author reported two cases in which the act of vomiting was present. Not appreciated at its value in the first case, it proved a means of diagnosis in the second. Both animals exhibited similar suspicions symptoms. There were diminution of lactation, extraordinary excitement, staring eyes, dilated pupils, mouth foaming and slobbery, violent efforts to break loose and attack the persons looking on, and more or less ptyalism. Both patients also exhibited the symptoms of animals about to vomit, viz.: arched back, contraction of the abdominal walls and expulsion per mouth of some of the contents of the stomach. Both animals recovered, the first without treatment and the second by mild therapeutics and regular diet. The diagnosis of suspected rabies made in the first case was not entertained in the second, on account of the appearance of the act of vomiting, misunderstood in the former, but meeting with proper attention in the latter case, and being interpreted as a symptom of inflammation affecting one or several of the stomachs.—*Ibid.*

USE OF SNOW IN VETERINARY PRACTICE.

By Mr. Repiquet.

In these days of hydrotherapy and of the use of water in its various modes and forms, the history of the three cases reported by the author are not without interest, especially to practitioners in the more rural districts, who have not always at their disposal all the means and curatives offered by the pharmacopia and the pharmacy. The first case is that of a ventral hernia, of very large dimensions, situated on the left side, resulting from a heavy fall. Called during the night, in the middle of winter, and having no conveniencies for the application of the necessary apparatus, Mr. R. decided to use snow, with which view a bag was laid over the part, being kept tightly in place with cords, and between that improvised bandage snow was packed in and pressure maintained by means of a surcingle. Directions were left to have the snow renewed as often as was necessary, and this treatment was continued for twenty-four hours. The next day the hernia had disappeared, and it did not return, and the animal resumed his work on the twentieth day.

The other two cases were sprains of the fetlock, treated by a somewhat similar method. In both cases the animals made a recovery in from twelve to fifteen days—a rapid cure for such lesions—though one of them became lame again and had to be submitted to more severe treatment.—*Ibid.*

NEUROMATOUS DIATHESIS IN A COW.

BY MR. CH. MOROT.

This is an exceptional record of a comparatively uncommon form of disease. The cow which was the subject of this record was an animal about fifteen years old, in good condition of flesh and fat, rating as about a second quality of butcher's meat. After being killed an examination of her fore parts revealed the presence of 1,325 neurematous growths of various sizes, and, in fact, there were undoubtedly a great many more, which were not and could not be counted without injuring the appearance of the meat for the market. Of these neuromas 134 were found at the base of the heart, on the surfaces of the large vascular trunks and of the auricles, and 22 were situated around the larynx and in the neighborhood of the base of the tongue. Upon the various nervous branches around the brachial plexuses there were 358 tumors of various dimensions, from the size of a millet seed to that of a large almond. In the thoracic cavity some 811 were counted, situated between the ribs, under the pleura, or outside the chest, in the anterior part of the ilio-spinalis muscle.

The interest of this case is due not only to the enormous quantity of the neoplasms found, but also to the rarity of the affection, which is one the records of which are exceedingly uncommon.—*Ibid.*

PROFESSIONAL ITEMS.

We have received the announcement of the fourth year of the comparatively new departure of the Laval University of Quebec—the Veterinary Department. Prof. J. A. Couture, V.M., the Director, is assisted by Dr. N. P. Cummings, V.M., and several other teachers of the medical department of the University. The course is of *three* years, and is given in French. Fees, $150 for the course, or $50 a year.

The following gentlemen received their degree at the last commencement: Mr. E. F. J. McKay, G. W. A. Beaulieu, Alphonse Lemoine.

SANITARY BULLETIN.

The *Monthly Bulletin of the Iowa State Board of Health*, published at Des Moines, gives the following interesting item relating to the presence of contagious diseases among domestic animals during the months of May, June and July:

" State Veterinarian Dr. Stalker examined, during the months of May, June and July, 445 horses, and found among them 67 cases of glanders and quarantined 60 more on suspicion of being affected with the same disease. He also inspected 924 head of cattle, of which 832 were found suffering with anthrax and 92 with actinomykosis."

If the example of the Board of Health of Iowa were followed by those of other States, a veterinary sanitary report might be published monthly or quarterly which would largely aid in the work of an international report, such as is prepared and published in Europe, as shown by the various veterinary publications issued in that quarter of the world.

SOCIETY MEETINGS.

PENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION.

The Pennsylvania State Veterinary Medical Association held its meeting at Easton, Sept. 4th, President Thos. B. Rayner in the chair.

On roll call, members Blank, Zuill, Rayner, Gladfelter, Hooker, Hoskins, Custer, Phillips, Keil, Hart, Sallade, Isaiah Michener, J. Curtis Michener, Keelor, Rohn and Schaufler responded.

With one correction the minutes of the last meeting were read and approved.

The following names for membership were favorably acted upon by the Board of Trustees and accepted as members of the Association: Dr. Chas. E. Bridge, Philadelphia, graduate of Am. Vet. College; Dr. Simon S. Moyer, Easton, graduate of New York College; Dr. A. W. Radley, graduate of Am. Vet. College; Dr. Joseph C. Thompson, Norristown, M.R.C.V.S., London.

The members were introduced in a few well chosen remarks by Dr. James W. Sallade.

The Committee on Legislation reported their readiness to present the bill adopted by the Association, at the opening of the next session of the State Legislature.

The Committee on Intelligence and Education reported a very satisfactory condition of the profession throughout the State; a very acceptable addition to the number of graduates added to the State roll during the preceding six months, and a growing recognition of our calling.

An amendment to the by-laws was adopted, whereby each member on signing the by-laws pledges himself to forfeit his certificate of membership on resignation from the Association.

Dr. Hart then made a very gratifying statement of the results of his resignation from the position of veterinarian to the People's Mutual Live Stock Insurance Company. A vote of thanks was accorded him for his fidelity to the Veterinary Association.

Notice was given of an amendment to the by-laws for creating a College Membership Committee, to be composed of a member of each college represented in our Association, who shall keep the Corresponding Secretary informed of any new graduates locating in our State from their respective colleges.

After a recess for dinner, which proved a very enjoyable affair, Dr. Isaiah Michener introduced the subject of the so-called disease "cerebro-spinal meningitis." He defined it as a nervous disorder, due to a special poison, a vegetable mold, generated in cesspools, etc., etc., and given into the air or taken into the food and striking the nerve centres and ganglia, often producing death in as short a period as six hours; not inflammatory in character, producing a complete paralysis of the muscles of deglutition.

A discussion followed as to the effect of brewers' grains and bad hay acting as a factor. The miasmatic character of the disease was strongly dwelt upon, and that it probably produced its first impression upon the peripheral ends of nerves was brought out, and much interesting evidence was offered from members who had witnessed many outbreaks.

The meeting adjourned to meet in Philadelphia in March, 1889.

W. Horace Hoskins, *Secretary.*

AMERICAN VETERINARY REVIEW,

NOVEMBER, 1888.

EDITORIAL.

The Review Prize.—The report made by the Chairman, Prof. Huidekoper—majority of four—"Studies of a Cattle Disease hitherto ill understood" wins the prize—Dr. P. Paquin the successful candidate—the course is yet open—same offer for the coming year—looking forward to more competition. Is Castration Veterinary Surgery?—The importance of the question—serious interests involved in the answer—how the question arose—charges of a learned justice—a case of prosecution—who is to prosecute in States where the profession is protected by law?—our opinion on the subject—affirmative, of course—as much as any other specialty—as much as obstetrics or orthopedy as branches of human medicine—is the verdict a just one?—would an appeal be more favorable? Material for the Review.—Liberality of our friends—Dr. Williams on "Maladie du Coit"—Dr. J. C. Meyer, Sr., on "Enzootic Meningitis of Cattle"—Dr. Klench on "Rattleweed or Loco Disease." California State Veterinary Society.—Its organization—its difficulties—our wishes and hopes for its success—let us hear from it. Special Notice.—Thanks to some of our friends—remember us to others.

The Review Prize.—The annual meeting of the United States Veterinary Medical Association was the occasion selected by Professor Huidekoper, chairman of the Review Prize Committee, for the consideration of the reports of his colleagues upon the merits and the comparative value of the papers which were printed in the May and June numbers of our journal. Four members, of the committee of five, expressed their preference for the paper entitled, "Studies of a Cattle Disease hitherto ill understood, by A. Westerner, M.D., V.S.," and it was, therefore, pronounced to be the better of the only two rival productions which had been submitted. The opening of the accompanying envelope disclosed the name of Dr. P. Paquin, of Columbia, Mo., as the author, and, consequently, the prize has been accorded and delivered to that gentleman. In closing this transaction, and congratulating Dr. Paquin on his success, it gives us pleasure to announce to our readers and the friends of the profession, that our offer is still open and available for the current year, with the same conditions as before, and we hope not only to receive a greater number of contributions for competition, but that we shall witness a still more extensive, complete and thorough discussion of important topics, such as shall both reflect credit upon its authors and be of permanent value to the profession, besides being at least commensurate with the value of the prize.

IS CASTRATION VETERINARY SURGERY?—We have received a letter of inquiry, from a practitioner, which involves a question of vital importance to the veterinarian, especially at the present time, when appeals for legislative action for the regulation of the practice of veterinary medicine are pending in many of the States, and the protection of statutory law has been already, to a partial extent, secured in a few.

The question has arisen incidentally, in connection with the announcement contained in a charge by a learned member of the judiciary, to the effect that, "Cutting or castrating horses or colts is not veterinary surgery," which is, of course, equivalent to saying that every man has a legal right to be a gelder, whether a veterinarian or not. The case was briefly this:

"A" is a registered practitioner in the State of New York; "B" is not, and has practiced castration; for this, "A" causes the arrest of "B," and commences proceedings, but on a second thought (which has proved to be an unlucky one), is induced to discontinue them, receiving a money consideration for doing so, and for payment of expenses incurred. "B" then sues "A" for malicious prosecution and false imprisonment, and it was in the trial of this case that the learned judge charged that "cutting or castrating horses or colts is not veterinary surgery." The result of it all was a verdict against "A" for $250 damages, and "A" lays his grievance before us, and appeals for advice, beyond bestowing which our appellate jurisdiction extends not.

We believe that "A" performed his duty, but that it would have been wiser, if instead of acting upon his own sole responsibility, he had enlisted the aid of some better authority to press the prosecution against "B." We think it would have been better for him to have referred the case to the New York State Veterinary Society, which body, we suppose, has made provision for similar cases, since the passage of the law as last amended. If this is not so, it is high time that registered veterinarians and practitioners should know where to look for the proper authority to which to apply in similar cases. But perhaps these suggestions are lacking in pertinency, and it may also be that the proceedings were sufficiently regular all through, or poor "B" would not have been in jail and exposed to prosecution.

The important question now is, whether "Castration is a part of veterinary surgery." We do not hesitate to answer this in the affirmative, and we feel confident that if the learned judge, whose dictum is quoted, had known what castration involves, not alone the mere fact of the removal of the organs of generation, but all the various points connected with the operation, he would never have given the decision referred to. The subject is not a new one, nor is the question one of recent date. It has been considered by the courts in Europe, and discussed before various commissions, when matters pertaining to the regulation of veterinary practice, titles and claims have been treated, and we feel quite certain that, to-day, it is a point pretty well settled. To say that castration is not veterinary surgery is, it seems to us, equivalent to denying that obstetric practice is a branch of medical science, or orthopedy a part of human surgery; in fact, that any specialty of medical or surgical art is properly medicine or surgery. That "B," while inhabiting a country or a State where the practice of veterinary medicine is unrestrained and unprotected by statute should have a right to continue his business without molestation, may be right and proper "according to law," but if he works at his trade where the law imposes obligations in the way of qualifications, and the practice is regulated by legislation, he undoubtedly becomes amenable to the legal authorities. We believe that if "A's" case were carried up to an appellate court, it might meet with a different termination, and, in fact, we consider it to be a question of such vital importance to the veterinary profession that we cannot refrain from expressing the hope that an effort may be made at once to obtain a reversal, by higher authority, of the decision of the lower jurisdiction.

MATERIAL FOR THE REVIEW.—Our friends have been so liberal lately in furnishing matter for the columns of the REVIEW that it has become impossible to accommodate them all in a single number, and we are compelled by our limitations of space to postpone a portion of their contributions until we have more room at our disposal. In our last number we began the publication of Dr. Williams' report on the Maladie du Coit outbreak in Illinois, and we shall continue it until it is completed. We are sure that our readers will study this report with interest. Its completeness and thoroughness render it the best publication of its kind in the English language, and, as after all, there appears a probability that through the constant importation of animals which is now taking place on an extensive scale, the disease may soon reappear, if, indeed, it does not become naturalized among us. Dr. Williams' report cannot but prove a valuable source of information for those who have not yet become acquainted with the peculiarities of this very serious disease.

A paper on the same subject as that for which the REVIEW prize has just been granted to Dr. Paquin, viz., "Mad Itch or Enzootic Meningitis of Cattle," and which was presented and read by its author, Dr. J. Meyer, Sr., of Cincinnati, at the last meeting of the United States Veterinary Medical Association, is also waiting for its turn to appear.

And last, but not least, we have a paper on the "Rattleweed or Loco Disease," by our friend Dr. J. P. Klench, which, we have no doubt, will be found to embody valuable information touching that peculiar affection. In a note accompanying his paper, Dr. Klench reports the formation of a veterinary society in California, and we tender, thereupon, our sincere compliments to our colleagues in the Golden State. The Doctor tells us, however, that it requires hard, up-hill work to maintain it, which is to be regretted. The organization of such a body is a benefit to all interested, and will amply repay all the time and labor bestowed upon its support. But there must be a sacrifice of petty jealousies and personal self-seeking, and disinterested effort and co-operation alone can secure the harmony and effect the results aimed at in its organization. It must not be for the benefit of one alone, or of a few, that such an association should be established. It must comprehend the general good, and, above all, should contemplate the elevation of the profession at large.

We hope at some future, though not remote period, to be able to announce the establishment of a chartered State society in California, and shall anxiously look, not only for the report of such an organization, but also for something of interest in the way of their transactions for publication.

Special Notice.—The new departure of the Review, in reducing the subscription price of our publication from four to three dollars, and our offer in connection with a proposed canvass for new subscribers have made it necessary to address a little circular to some of our friends containing a statement of their indebtedness. Many of them have understood the reasons by which we were influenced in taking this course, and have responded in the way always satisfactory to publishers, viz., liquidating their dues. There are several, however, who have not yet come to the rescue. While we offer our thanks to the former class, we once more make an opportunity to remind the latter of the intent and contents of our last communication.

ORIGINAL ARTICLES.

MALADIE DU COIT.

By W. L. Williams, V.S.

Report on the outbreak in Illinois to the State Board of Live Stock Commissioners.

(*Continued from page* 303.)

Causes.—Various authors propound diverse theories as to the primary cause or causes of the disease, but each fails to produce a tangible origin. Amongst the proposed causes may be mentioned atmospheric conditions, faulty hygiene or dirt, too frequent copulation, or too frequent sexual excitement without sexual contact, crossing of breeds, vaginal catarrh in the mare, etc. But these influences have existed as long in countries where the disease is unknown, as in those where it has prevailed for nearly a century or more, without producing the disease.

Others have imagined its cause to be the fornication or bestiality of syphilitic men with the female ass, as is doubtless practiced by Arabs, in the belief that this bestiality will cure them of their malady, and thence from the ass to the horse by copulation; but against this theory stands the objection already mentioned, that human syphilis is not transmissible to solipeds.

Symptomatology.—Holding that the so-called benign form of the disease, as described by English authors, is a wholly distinct venereal disorder, there is no necessity for detailing here the symptoms of this affection, but I will follow the description of their so-called malignant form, noting such differences as may have presented themselves in the present outbreak. It may be stated, however, that in the so-called benignant form authors describe essentially the same local symptoms as in their malignant type, but assert that these symptoms remain purely local and are followed by recovery in two to eight weeks.

Symptoms in the mare.—In a variable length of time after copulation, usually eight or nine days, the mare exhibits uterine excitement resembling exaggerated vestrum (heat), the vulva becomes swollen, the mucous membrane of the vulva and vagina is reddened and there is a vaginal discharge of at first a serous nature, which soon increases, becomes thicker, sticky, viscid and white, yellow, grayish or reddish in color, which collects about and soils the tail and perinæum.

The mare is restless, as evinced by occasional stamping with the hind feet. The urine is voided frequently in small quantities, its passage irritating the already congested or inflamed vaginal mucous membrane, causing increased restlessness. The vaginal mucous membrane continues to grow more irritable and the color becomes a deeper red. The lips of the vulva become more distinctly swollen, the swelling being of an œdematous (dropsical) nature.

Eruptions.—"At this time there appears on the mucous membrane of the vagina, vulva and clitoris, small miliary pustules, which soon become little superficial ulcers, no more than one-fifth of an inch in diameter. These ulcers are not long in cicatrizing but they are replaced by others, which, like the first crop, are most numerous in the fossa navicularis, on the clitoris, and near the margin of the vulva; the symptoms are intermittent, disappearing for some days and again manifesting themselves, in the majority of cases becoming milder, until they finally disappear."—(Fleming.)

Unfortunately we have not enjoyed the privilege of seeing cases of less than several weeks standing, but in none of these have we seen the pustules and ulcers above described, nor have we noticed any changes or appearances in the parts that would suggest the prior existence of such eruptions, neither can we learn from the many intelligent horse-breeders, who have had abundant opportunities for close observation, that such eruptions have occurred to that marked extent described by Fleming and others in the present outbreak; and since Fleming, as previously quoted, describes these pustules and ulcers as occurring more particularly in the so-called benign form, we may well doubt, if not wholly deny, the occurrence to any marked extent of any such eruptions in the affection under consideration, especially when we remember that such eruptions do occur in abundance in the benign venereal disease, with which English authors so hopelessly mix the true equine syphilis.

If any eruptions at all have occurred in the present outbreak they have been entirely within the vagina, very few in number and of very brief existence, and not generally noticeable to an ordinarily close observer.

The swelling of the lips of the vulva is intermittent and variable, extending sometimes downwards along the perinæum to the mammary region (udder) and is occasionally more marked in one lip of the vulva than in the other, giqing it a deformed appearance. The mucous membrane of the vagina is red, swollen and wrinkled, appearing unnaturally rough to the eye. English writers describe the frequent occurrence on the external surface of the lips of the vulva, on the perinæum and inner face of the thighs, of lenticular pustules, succeeded by readily healing ulcers, but no such eruptions have occurred in the present outbreak.

There does occur, however, in a large proportion of cases, a pecular loss of pigment in the skin of the vulva, perinæum and anus, beginning usually in spots of variable size and shape, gradually enlarging and coalescing until the entire vulva, perinæum and anus may be one continuous white patch, with irregular border, or dotted over with white spots varying from one-fourth to one inch or more in diameter. The vaginal discharge may vary greatly in amount and may cease after a few months, or may persist for a year or more, is usually dirty white or grayish in color, frequently possesses an offensive odor, becomes viscid and glutinous, adhering to and irritating or excoriating the adjacent parts.

Coitus increases the vaginal discharge, as well as aggravates in every way the symptoms of the disease. In many cases there is a marked loss of power in the vulva and vagina, causing an involuntary discharge of accumulated matter from the vagina during sudden exercise.

Incontinence of urine has been noted in a well-marked case of fifteen months' standing, which added to the catarrhal discharge and, adhering to the tail and thighs, made a very repulsive sight.

The most constant and persistent symptoms noted in the present outbreak are the changes in the vulva and clitoris.

The margins of the vulva lips lose their black pigment early in the disease, and is not replaced until after the white spots on the external parts of the vulva, on anus, perinæum and under side of tail have wholly disappeared, which usually occurs after six or eight months. The vulva shows a marked tendency to gape, especially at its lower commissure, due partly, doubtless, to a loss of power in the vulva itself, but mainly to the enlarged clitoris pushing the lips apart; this gaping giving the appearance of extreme age to a young mare. The clitoris is quite uniformly enlarged, exhibiting a smooth shining surface, wholly devoid of pigment and unnaturally dry, there appearing to be a destruction of the mucous-secreting glands of the clitoris and fossa navicularis, or at least a temporary destruction of their secreting power.

Infected mares rarely conceive, and the few that do almost invariably abort by the sixth month, and in case the foal is carried to the full period, it is almost sure to be weakly and short-lived. There is frequently considerable pruritis (itching), as evinced by rubbing of the tail and hinder parts and licking or biting various parts of the body. Comparatively early in the course of the disease there are frequent œdematous swellings of the legs and abdomen.

The inguinal glands may enlarge and even suppurate, and the mammæ (udder) occasionally inflame and enlarge. Enlargement of the submaxillary glands (the glands between the angles of the lower jaw) is frequently present and in some cases there is seen a viscid, sticky discharge from the nostrils, closely resembling glanders, which resemblance is heightened by the appearance on the nasal membrane of small superficial erosions or ulcers, and usually associated with the nasal discharge there is observed also a muco-purulent discharge from the eyes.

In the present outbreak, as in those described by German writers, there occurred frequently, suddenly appearing, sharply defined, circular or various shaped flattened swellings, one, two or even six or seven inches in diameter, hard and unyielding to the touch, sometimes painful upon manipulation, at other times causing pruritis, as is indicated by the animal licking or biting at the affected parts. These swellings may appear at any time from eight to ten weeks to the end of the disease and may disappear as suddenly as they came, and others may appear in other parts of the body. In nearly all cases, as the disease progresses, there appear signs of weakness and paralysis, mainly of the hinder parts, at first exhibiting an unsteady gait, the animal bringing the hind feet forward in a difficult, uncertain manner, usually dragging the toes along the ground, or at least striking the ground at the middle of the stride, and in bringing the foot to the ground, placing the toe down first, with the fetlock flexed, which is then extended suddenly as the heel is brought down. This imperfect action may be seen in one or both hind limbs, or may appear first in one, then in the other, then in both, persist for a few days, then disappear entirely, or nearly so, and then return again worse than ever.

Sometimes this lameness is of a spasmodic nature, somewhat resembling stringhalt, the hocks being suddenly flexed and carried forward with a jerk. As the disease advances the lameness usually increases, the back becomes arched, the hind feet are dragged along the ground, until finally the paralysis becomes so severe that the animal is unable to rise when down, and in their struggles to get up, it is said that fractures sometimes occur in the bones of the loins or hips. Emaciation usually begins early in the disease and increases rapidly when the paralytic symptoms develop, until the animal soon presents a hideous sight, the whole body being wasted to a mere skeleton, in spite of the fact that the appetite remains unimpaired to the last and the food appears to be well digested. Late in the course of the disease there is occasionally seen paralysis of a lip or an ear.

Death may be due to a gradual giving way of the animal powers from the extreme marasmus, or to pneumonia or other accidental complications.

IN THE STALLION

the general symptoms are essentially the same as in the mare, so we will need mainly to consider the local manifestations of the disease in the genital organs. Its commencement is far more insidious in the stallion than in the mare, being in many cases wholly unrecognizable for months. Sometimes the symptoms appear early, while in other cases the development of the disease is tardy and and apparently unnoticeable; or, the primary symptoms may appear for a few days or weeks, then disappear entirely and the stallion remain apparently well for months, although he is returned to the stud (which doubtless aggravates the disease) and yet be capable of transmitting the malady at least six months later, probably several years, without affording other evidence of disease. Usually the first noticeable sign of disease is a well marked peculiar swelling of the prepuce, of an indolent, doughy nature, which may extend forward to and implicate the anterior part of the sheath and backward to and including the scrotum, the skin being thickened, smooth and shining. These symptoms may disappear entirely in a few days to a few weeks, and leave no tangible trace of the disease, except the power of transmitting it to other animals, or it may remain for some months or years, either to be complicated with, or succeeded by, other symptoms.

It may be, as stated by most writers, that some stallions do not develop these primary tumefactions, but there is certainly good reason to suspect that, in many of the extremely occult cases, these primary symptoms *did* appear at first, but were attributed to accidental local injuries, such as often occur, passed almost unnoticed, and were soon forgotten by the attendant; months go by and the stallion resumes his work the following year, only to transmit the disease to some of the mares he serves, or by excitement of copulation, to develop the characteristic signs of the disease. At this early stage of the disease, most writers, but not all, describe erosions and eruptions upon the prepuce, penis and sheath, and some eruptions are said to have been seen in the present outbreak, but they were of a very insignificant character, few in number, no successive crops, and all disappearing quickly, leaving no noticeable scar. In most cases no erosions or eruptious were noticed at all, and in the others they were probably due, to a great extent, to accidental abrasions, or erosions due to contact of the discharge from the urethra with the eroded parts, which were usually the penis and prepuce about the preputial ring.

The sheath may or may not become swollen, the swelling may disappear early, or may persist throughout the disease, the swelling when present varying in size, susceptible to unaccountable turns of growth or subsidence, and partaking of the same peculiar indolent character as the swellings of the prepuce, or may be indurated and hard from the presence of suppurating lymphatic glands.

The testicles are in most cases unusually pendent from paralysis of the cremastic muscle, but in some cases they lie close against the external ring, when greatly atrophied, or may even be pushed up into the ring by abscesses or indurations of the lower part of the scrotum. In size they may be normal, enlarged, or atrophied. In the earlier stages enlargement is probably the rule, but in the latter stages atrophy is almost constant, and when apparent enlargement does occur, it is generally due, not to enlargement of the testicle proper (parenchyma), but to a thickening of the coverings of the testicle. In consistency, the testicles are almost always soft and flabby, with an indefinite contour when manipulated.

The penis is said to be sometimes hypertrophied (enlarged) and sometimes atrophied (wasted), but in the present outbreak no marked deviation from the normal size has been noted. Writers also generally mention that in some cases the mucous membrane of the penis may be unnaturally red, or be the seat of bluish or violet elliptical patches, or of yellowish-white marks, probably the result of pre-existent eruptions, none of which have been noted in the present outbreak. In a large proportion of cases there is a loss of retractile power in the penis, so that it usually hangs partly out of the sheath, in the prepuce, or in extreme cases, it may hang at full length, entirely out of the prepuce, wholly powerless.

The sexual desire usually remains unimpaired throughout the disease, and in many animals the power to copulate is but little impaired, but in the earlier stages, during the tumefaction of prepuce and penis, either from excessive erection or other cause, the stallion fails in many cases to effect coition, and late in the course of disease the same inability may arise from loss of power in the penis or from the extreme paralysis of the posterior parts.

The urethral opening may be normal, or abnormally red and swollen, and in some cases there is a muco-purulent discharge from the urethra, while in others there are occasional involuntary emissions of semen, mixed with mucus and pus, containing a few dead or very inert spermatozoa. *Urination* is usually frequent and attended with some pain, and the urine may vary from normal to thick, yellowish, viscid, etc., or be mixed with mucus or pus from the urethra. In some cases polyuria or diabetes is well marked.

Emaciation, with dry, staring coat, is noted in a majority of cases as the malady advances, but is not uniformly seen and is usually of a more or less intermittent character, progressing rapidly for a time, then halting, perhaps improving, when the emaciation again sets in with increased virulence, being especially marked in the hind quarters. The symptoms of paralysis and intermittent lameness in the posterior parts appear much the same as in the mare. There is a swaying, unsteady gait, as if the loins were affected, lameness in one or both hind legs, and a jerky, stringhalt like gait.

Some authors mention that in some cases there appear peculiar epileptiform convulsions in the stallion, when approached by a mare, in which the stallion is seized with spasmodic trembling, rigidity of the muscles of the neck, convulsive shaking of the head, dilatation of the eyes and nostrils, rolling of eyeballs, etc. In one stallion (VIII) there was a marked loss of voice, an excessively glutinous nasal discharge, large nodulated submaxillary lymphatic glands, and distinct superficial erosions on the nasal mucous membrane.

Pruritis is usually more marked in the stallion than in the mare, causing him to rub or bite violently the feet, pasterns, or other affected parts, producing large unhealthy sores. The elliptical welt-like swellings of the skin are usually also more marked in the stallion than in the mare. There is also a strong tendency to suppuration of the inguinal and scrotal lymphatic glands. The inguinal glands, in some cases in the present outbreak, were the seat of extraordinarily large abscesses, in some cases filling up the entire groin and causing excessive swelling of the scrotum, extending down almost to the hock joints, and when the abscesses finally ruptured, they discharged near a gallon of thick, curdled pus. The lymphatics of the sheath and scrotum were still more prone to suppuration, but the abscesses were tardy, indolent, and usually not very extensive, but their presence frequently caused extensive indurations, pushing the testicle upwards toward the inguinal ring and occupying the ordinary position of the testicle, could be readily mistaken for that organ. In one stallion (XVIII) there is marked paralysis and atrophy of the extensor muscles of one forearm (*extensor metacarpi magnus* and *extensor pedis*), which may be due to the disease, but more likely to accidental injury.

Course and termination. The course of the disease is very prone to remissions and exacerbations, progressing slowly in the majority of cases to a fatal termination.

Recovery may and does occur even after extreme emaciation and when paralysis has been so complete that the animal could not rise without assistance.

The duration of the disease may extend from three months to as many or more years, and recovery, either apparent or real, take place at any intervening time.

(*To be continued.*)

SHEEP DISEASES: THEIR CAUSES, NATURE AND PREVENTION.*

By Thomas Walley, M.R.C.V.S.

(*Continued from page* 322.)

In addition to blood diseases proper we have also to notice those due to parasites:

Disease-producing (pathogenic) *parasites* form two classes, viz., *vegetable and animal parasites.*

Vegetable parasites are again subdivided into two important classes—(1) *Mould fungi* (hyphomycetes and blastomycetes); (2) *fission or cleft fungi* (schizomycetes); and in reference to these fungi the remarkable fact may be noticed that they are identical in form (morphologically) with the fungi by whose agency the various processes of decomposition of organic matter in the soil are carried on; the former class requiring a liberal supply of oxygen, are found on the surface, the latter in the deeper strata of the soil.

Those fungi which are engaged in such beneficent processes as the breaking up of organic matters for the use of vegetables are, so far as we know, *innocent* in character, or non-pathogenic; but grave doubts have been entertained by many as to their innocency under all circumstances; indeed, some pathologists insist that innocent organisms do sometimes contract destructive properties and it would be difficult to prove otherwise; if there is any truth in the theory of evolution as applied to the higher, there is no reason why the theory should not apply equally to the lower organisms.

The ordinary *eruptive diseases* are aphtha, ecezema of the lips, and so-called carbuncle of the lip and the coronets.

Of *aphtha* or *thrush* we have two forms, viz., a benign and a malignant—the former attacking lambs usually, the latter also being seen in ewes, and when so occurring being propagated from the ewes to the lambs by the medium of the milk.

Mild aphtha is attributed to a fungus designated the "oidium albicans." The malignant form is also probably due to a fungus.

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* Transactions of the Highland and Agricultural Society of Scotland.

The former is characterized by a whitish furred eruption in the mouth, with a little fever and diarrhœa, and runs its course quickly without producing any material injury to the system. The latter is accompanied by malignant eruptions in the mouth and on the lips, bleeding ulceration, and often great destruction, with eruptions about the body, diarrhœa or dysentery, and even putrefactive fever, and the formation of abscesses about the head and in the lungs (pyæmia).

These diseases are often looked upon as contagious in character; the truth is, probably in most cases, that they are all produced by the same cause, *i. e.*, originating outside the body.

Eczema of the lips (eczema labialis) is usually attributed to the irritation of fine particles of gravel or sand, aggravated by long-continued wet: but while recognizing this as a cause, I am of opinion that in some instances it is due to indigestion or to stomach irritation, and probably to the irritating action of pollen-grain. Of itself, eczema is a mild affection. It occurs in the form of crops of small bladders (vesicles) in the lips, accompanied by some local inflammation and slight fever. If it is neglected, or the cause allowed to remain in operation, serious results may and do ensue. The lips become enormously swollen, misshapen and tender, and the skin chapped and ulcerated; small abscesses form along the sides of the face, and in the long run suppuration of the glands of the neck takes place; the lungs also become the seat of abscesses, which produce death and render the carcass not only useless, but dangerous if consumed by man.

Whenever eczema makes its appearance the pasture should be changed, a little laxative and alterative medicine administered and some protective agent, such as carbolised lard, smeared over the lips of the affected animals.

Carbuncle is not of such frequent occurrence as eczema, but it is common in lambs, especially during the autumn months, in certain districts. It is commonly known as "hair and hoof" and "orf"; and while the lesion is not strictly of a carbuncular character, I have retained the term on account of its use being warranted by custom.

The actual nature of the disease has not yet been explained;

but, judging from its characters, I am of opinion that it is due either to a depraved condition of the blood as the result of injudicious management, to irritation of the stomach and bowels, to a microscopic parasite acting locally, or to some parasitic product, such as ergot, acting systemically.

Like eczema it is ordinarily of a mild character, but if neglected it may lead to deep-seated and destructive inflammation of the involved organs; ultimately producing death by exhaustion or by blood poisoning.

The disease makes its appearance at the outset as a painful circumscribed swelling on the coronet or lip, or both. In due course ulceration of the skin results and an angry looking sore, associated with considerable thickening of the surrounding tissues, is formed. If properly treated this sore quickly heals, but if irritated by dirt or other material it takes on unhealthy action, spreads to surrounding tissues, and becomes very intractable.

The measures recommended in reference to eczema should be also adopted in dealing with this affection.

Of the extraordinary diseases believed to be due to fission or cleft fungi, we have two forms, viz., those which are *non-contagious* and those which are *contagious.* The former are mainly the class of disease marked by putrefaction and blood poisoning (septicæmia), and which have already been largely alluded to. Contagious diseases proper, peculiar to sheep in this country, are fortunately few. So far as we know, they are largely exempt from consumption (tuberculosis), from glanders and from pleuro-pneumonia; they are, however, highly susceptible, though only secondarily, to foot-and-mouth disease, to malignant catarrh, to dysentery and to anthrax.

Malignant catarrh is often very destructive to hill sheep, especially in bad seasons, and it is very intractable. Beginning, apparently, as a simple cold, it is quickly followed by destructive inflammation of the lining of the nostrils and ulceration, which is again succeeded by abscesses in the glands of the face and throat, and in the lungs; and, if the animal lives long enough, by emaciation and diarrhœa. The particular form of fungi or germs to which it is due have not yet been recognized, but that it is fungoid in origin is almost a certainty, and it is probable that the fungus belongs to the spherical form of bacteria—that it is a micrococcus.

Dysentery appears usually among sheep in hot summer weather with excess of moisture, and on rank pastures or on overstocked and consequently befouled pastures; and in droughty summer on lands upon which there are stagnant pools of water with rank growth of grass around their borders. Even in the dysentery of man the exact nature of the disease has not been determined, but it is generally thought that it is due to a fungus. Shepherds entertain such strong views as to its contagious character as, in many instances, to lead them to smear tar on the noses of their sheep; they had better smear it on the skin under their tails, or remove them from the contaminated pastures and apply a top-dressing of lime or salt.

Anthrax—so-called from a "live coal" owing to the dark color of the local lesions—is the most deadly of all this class of diseases, and does not confine its ravages to one particular kind of animal, but distributes its favors impartially. So-called "red braxy" is often nothing more or less than anthrax. The labors of biologists have made us intimately acquainted with the nature of this disease, and its literature is simply enormous. Moreover, it is the disease the discovery of the character of which has led to such important results in reference to other germ disorders.

It is due to a minute staff-like organism, termed from its shape a *bacillus*, and belonging to the class of fission fungi. It is, on the whole, the largest of this class of fungi found in animals and in the blood streams and tissues multiplies only by fission, but when cultivated in proper media, or, what is of more importance to farmers, when it gains access to suitable soils, it multiplies rapidly by spores which by various agencies find their way on to vegetables grown on such soils and into drinking water, and produce the disease in other animals that may take in the contaminated food and water. These organisms, and particularly their spores, are possessed of a wonderful vitality and retain their destructive properties for a very considerable period in the earth; hence the necessity of thoroughly destroying every part of the carcass, the blood and the internal organs of animals which have suffered from the disease. It is propagable to the human subject and is known under various designations in many parts of the world. There is reason too to believe that it may be disseminated by artificial manures, and sometimes even by artificial foods, as it often appears in situations where it has never before been seen.

Black-leg is a disease somewhat allied to it, but the organism that produces it is of rather a different character and it is much less virulent.

Sheep-pox is a disease probably unknown to most of the present generation of breeders, and I sincerely hope it will long remain so. With the precautions at present taken by the Privy Council authorities there is little probability of its being introduced into this country, as it is purely an exotic disease.

Pleuro-pneumonia is peculiar to the ox, and no person has as yet succeeded in transmitting it to any other animal, though statements have recently been made by certain parties to the effect that sheep suffer from contagious lung disease. In a very wide experience, I have never yet met with any outbreak of lung disease in sheep the characters and cause of which warranted me in attributing to it, even in the slightest degree, contagious properties. I have been able to trace all such cases as have come under my notice to purely local causes—to, in fact, improper management in the way of feeding, associated with exposure to cold and wet and to rapid alternations of temperature.

In many instances the foundation for lung disease is laid at birth, the lungs, owing to the lowering influence of cold or cold and wet, never being properly inflated. Lung disease of this class is more prevalent in some districts than others and particularly in exposed localities; and this fact points to the necessity of providing sheep, when possible, with artificial shelter in bad weather.

The animal parasites of most importance to breeders of sheep are those associated with rot, with sturdy and with hoose. Tapeworms and round worms in the intestines are also sometimes the cause of great losses.

Rot is due to a flat worm known as the fluke (*Distoma hepaticum* or *Fasciola hepaticum*), which inhabits the bile ducts of the liver and there sets up extensive inflammation, from which result various organic changes, such as hardening and softening, leading in the end to annihilation of its function and, as a result, emaciation, anæmia, dropsy, diarrhœa, and death from exhaustion; in cold nights following warm days numbers die from congestion of the lungs as the result of chill.

A few of the more important features only of the worm and its life history can be here alluded to.

The worm itself is bisexual (hermaphrodite) and is propagated by eggs which are passed out with the bile and the dung in countless thousands and lodge upon the grass or other places. If the eggs fall on to dry soil, no harm results; if, on the contrary, they fall on wet places the disease is propagated to other sheep.

The egg is oval in shape, has a lid (operculum) at one extremity and contains an embryo which, when fully matured, is provided with delicate hair-like processes known as cilia. The lid of the egg-shell, partly by the agency of moisture, partly by the movement of the contained embryo, is lifted and allows of the escape of the latter, when it at once begins to move actively about in search of a host in the form of a particular snail (the *Limnus truncatulus*), whose body it penetrates by the aid of a boring apparatus and there becomes encysted and during its residence therein it undergoes a series of wonderful changes in form, passing through several generations, until a tadpole-like creature is produced, which after gaining its liberty encysts itself at the lower parts of the blades of grasses from whence sheep pick it up in the process of grazing; ultimately it finds its way into the liver.

Sheep are more susceptible to rot than are other animals, simply because they bite closer—a hog-mouthed sheep escapes; but cattle, and very many of them too, and occasionally in wet seasons colts also, suffer from the ravages of the fluke.

Rot is never seen on dry lands nor on salt marshes, and even rotting grounds are safe after a frost.

The lessons to be learned in reference to rot are—1st, that it cannot occur on dry lands, because there are no snails there--hence the value of draining; 2nd, that salt is a preventative, because it kills snails as also the embryos of the worm; 3rd, that rotten sheep should be at once slaughtered, their excrements mixed with lime or salt and the liver and intestines carefully destroyed. Its existence can be detected early by the victims thriving very rapidly and by the membrane of the eye contracting a yellow tinge (jaundice).

Sturdy is due to the presence of a bladder worm in the brain and is so called because the animal is stupid, a synonymous term in Norfolk being *dunt;* and if the victim turns round to one side it is known as *turn-sick*, *gid*, &c.; while, owing to peculiarities of gait, affected sheep are often spoken of as "sailors," "trotters" and "swervers."

The bladder worm, or hydatid, is the immature form of one of the tape-worms of the dog (the *Tœnia cœnurus*)*;* it is known as the *many-headed hydatid* (*Cœnurus cerebralis*) and sheep become the victims of it by taking into their stomachs, in the ordinary act of grazing, the eggs (containing embryos) of the tape-worm.

The embryo ultimately finds its way to the brain either by the circulation or by boring, and sometimes it gains access to the spinal cord in the neck and produces the condition known as "thorter-ill."

From the fact that in some districts a very large number of cases of sturdy are seen, I have been led to form the opinion that there must be some other host of the particular tape-worm than the dog, and of all animals the fox is the most likely.

The treatment of sturdy is often very successful, both by simple tapping and by extraction of the bladder-worm, but it is simple madness to allow a sheep to pine away with the disease, as many do, until it is useless; better by half kill it as soon as it shows symptoms of the disease and make the best of it.

As to the prevention of sturdy, the first and most important thing to do is to carefully destroy the brains of affected sheep, instead, as is often done, throwing the "bleb" to the dog to eat; and secondly, to keep dogs as free from tape-worm as possible.

Hoose is due to a round worm (the *Strongylus filarius*) which when mature resembles a piece of white thread and the female of which is about 1½ to 2 inches long. It inhabits the wind-pipe and bronchial tubes, but its embryos gain access to the deeper parts of the lungs and there set up much irritation and patchy inflammation.

In the lungs of thousands of sheep, not only native but American also, killed in our slaughter-houses, numerous small nodules of a yellowish color and about the size of a millet seed are seen; these have often been mistaken for tubercle (consumption) but the microscope reveals the embryonic parasites in their interior.

The development of the worm is not understood; one thing, however, is certain, viz., that salt spread over the contaminated pastures is a sure preventive; drainage also is useful, but sheep should not, if it can be avoided, be put on infected fields.

The lungs too of affected sheep should be destroyed instead, as is often the case, being sold or used as food for people or for cats. Cooking certainly kills the parasites if it is effectually carried out.

Many sheep suffering from hoose die from debility induced by diarrhœa; others die from suffocation and many from congestion of the lungs, if exposed to a chill.

Another round worm, the twisted strongyle (*Strongylus contortus*), is often the cause of great loss amongst sheep. It is a small worm like a piece of red thread and is found clinging, by the aid of barbs, to the membrane of the fourth stomach, there causing inflammation, diarrhœa, emaciation and death.

It is most seen on old pasture land where there is plenty of fog for cover, and this fact points to the necessity of removing the fog from such pastures by burning or by chain-harrows. Top-dressing with lime or salt should also be practiced.

The only tape-worm of importance found in the sheep is the *tænia expansa*, but it is questionable if it does much harm and I have seldom found it unassociated with other parasites.

In conclusion, I would say that no man can be a successful sheep farmer unless he has some knowledge of the structure of the animals he deals with (histology) or of the functions of the different organs of its body (physiology); like the machinist, he must not only make himself acquainted with the wheels and pistons and cranks of his machine, he must know its every fibre; and even as machines are easily deranged so sheep are "kittle cattle"; no more delicate animal breathes.

In addition to the above, the farmer must have a knowledge of the chemistry as well as of the practice of agriculture and if disease makes its appearance amongst his flocks he should at once seek the aid of some one better versed in these matters than himself.

SNAKE BITE AND ITS ANTIDOTE.—IV.

EXPERIMENTS WITH CROTALUS VENOM AND REPUTED ANTIDOTES, WITH NOTES ON THE SALIVA OF HELODERMA ("GILA MONSTER.")

By H. C. Yarrow, M.D., Curator Dept. Reptiles, U. S. National Museum.

(*From Forest and Stream.*)

(*Continued from page* 327.)

Were it not for the fact that many persons still believe in the antidotal efficacy of ammonia in snake bite poisoning it would not have been thought worth while to experiment with this agent any further, and a number of observers from the time of Fontana to the present day have proved not only its absolute uselessness, but have also shown that under certain conditions of administration it is dangerous to life. Weir Mitchell says that in one case he thinks he actually destroyed a dog with the means which was meant to save him, and our experiments, it is thought, will show a similar condition of affairs. To Dr. Halford has been attributed the method of cure of venom poisoning by ammonia, but this is an error, as has already been shown in this paper, and if further proof is wanting it may be found in the *Medical Times and Gazette*, London, 1873, ii., p. 216, which gives the translation of a letter written by Felix Fontana to Mr. Gibelin, dated Florence, July 1, 1872, in which he states he experimented upon lambs and rabbits, using from twenty to forty drops of ammonia injected into jugular vein; none recovered. He also states that twelve experiments may not be sufficient to show the absolute inability of ammonia as an antidote, but they show it is not a specific. In his work on poisons, p. 3, he says in reference to its use externally or internally, "It is then a fact proved that ammonia is entirely useless whether applied simply to the bitten part or whether taken internally, and there is even reason to suspect that it was hurtful."

Inasmuch as Dr. Halford revived an interest in the ammonia plan of treatment, it seems only fair to give a resumé of his plan of treatment, which will be found in his pamphlet entitled, "New Treatment of Snake Bite," by G. B. Halford, Melbourne, 1869, p. 16, in which he recommends the bite to be cut out, and when symptoms of drowsiness or sickness come, inject ammonia ten drops to twenty of water into vein (adult dose) with hypodermic syringe pointed toward heart (does not mention care to be taken to avoid air entering vein). Gives a number of examples. Speaks of injecting ammonia into right and left ventricles of heart, carotids and jugulars, the dog being under chloroform. Half dram liquor ammonia B. P. sp. grav. 0.959 every fifteen minutes or so for several hours. Dogs not injured but were finally killed, as chest had been opened.

He again discusses the subject in the *Medical Times and Gazette*, London, ii., p.p., 90, 170, 224, 323, 461, 575, 712, and gives a number of apparently well authenticated cases.

Average length of time it takes to kill dogs with cobra bite according to Halford is 3h. 23m.; *Haplocephalus curtus* 2h, 15m., fowls by cobra 18m. Some die in much shorter time.

Fayrer found that the injection of ammonia into the veins of healthy dogs was followed by grave consequences, such as convulsions and marked muscular prostration, and no immunity was produced when the animals were bitten by cobras. He thought the ammonia treatment hastened death, and Healey, (G. D.) and Rees (W. C.) report a case of snake bite in the Australian *Medical Journal*, 1874, XIX., p. 49, in which ammonia was injected into the veins and brandy given internally, which resulted in death.

In our own experiments, believing that the venom, or at least a part of it, remained in the vicinity of the wound and was gradually absorbed, instead of injecting ammonia into a vein it was thrown into the tissues contiguous to the part where the venom was injected, with the following result:

Nov. 4, 1887—12:53 P. M.—Injected a strong, healthy pigeon in the right side of the breast with 3 minims of glycerine venom, followed at once with 25 minims of ammonia solution.

12:55 P. M.—Bird died, having had tetanic spasms almost immediately after the last injection. The post mortem examination showed the heart to be empty, and much fluidity of the extravasated blood in vicinity of wound was noticed.

Inasmuch as it had been shown by previous experiments that a lethal dose of 3 minims of glycerine venom requires a much longer time to produce death in pigeons, the supposition naturally arose that perhaps the ammonia itself was the cause of death, and the following experiment was tried a few days after:

Nov. 8—12:11 P. M.—Injected 25 minims of ammonia solution in breast of healthy pigeon.

12:13½ P. M.—The pigeon fell over backward from its perch, gave a convulsive struggle, and died in half a minute.

Five minims of glycerine venom were thrown into the leg of a rabbitt, followed by thirty minims of ammonia solution, and the rabbit perished in five minutes.

The question may well be asked, if Halford's solution of ammonia has such a startling effect when injected into the tissues, what would be the result of throwing it directly into the veins? The evidence being so conclusive regarding the inefficacy of ammonia as an antidote, no further sacrifices of animals were made.

Among the many remedies that have been recommended in snake bite, the different species of *Euphorbia* hold a prominent place, in fact in the Western States and Territories it is believed a specific not only for man but beast, as has been stated to the writer by his friend, Capt. Chas. Bendire, U. S. A., and that this belief was held by our trans-Atlantic brethren is shown by the following statement of Dr. Hurant, *Jour. de Chem. Med. Pharm. et Toxicol.*, Par., 1839, 2 s., v. 272.

While botanizing in the country a favorite dog was bitten by a viper; fortunately close at hand he found the *Euphorbia Cy-*

parissias, and having expressed some of the juice, he pressed it into the wound and applied the bruised leaves. The dog recovered.

Dr. B. J. D. Irwin, U. S. A., *A. J. M. S.*, Phila., 1861, n. s., p. 89, speaks of using *Euphorbia Prostrata*—called Gollindrinera by Mexicans. Gave four fluid ounces of a watery solution of *E. p.*, and applied bruised plant to wound—repeated dose in one hour. Animals recovered. Other *Euphorbias* said to be useful: *Capitata*, *correliata*, *palustris*, and *villosa*.

In view of these statements it was determined to try the antidotal effect of *Euphorbia*, but unfortunately only one species could be obtained at this season—*Euphorbia maculata*, of which a strong tincture was made, and to ascertain if it possessed itself poisonous qualities, at 12:45 P. M., Nov. 12, 1887, a healthy male rabbit received in right hind leg a hypodermic injection of 50 minims of the tincture, and no unpleasant symptoms were manifested, the animal having been carefully watched. Nov. 14 he was perfectly well. The next experiment was as follows:

Nov. 12—12:30 P. M.—Injected 5 minims of venom solution in hind leg of rabbit, followed at once by 50 minims of alcoholic tincture *Euphorbia maculata*, and 2 fluid drams given by stomach, and wet pad of tincture applied over wound.

12:35 P. M.—When released animal was very feeble, hardly able to stand.

1:15 P. M.—Gave rabbit 1 dram of tincture *Euphorbia* and 1 dram of water per mouth; animal very weak.

1:20 P. M.—Rabbit very nearly dead; respiration fast; has lost all motion.

2:15 P. M.—Rabbit quietly died; very little swelling or discoloration of the part injected.

This single experiment is given for what it is worth, and can hardly be considered as a fair test, but efforts will be made to obtain the species of *Euphorbia* mentioned as an antidote by Dr. Irwin, and its effects will be further investigated.

Dr. Robert Fletcher, in his valuable paper entitled, "A Study of some Recent Experiments in Serpent Venom," in the *Am. Jour. of Med. Sci.*, 1883, n. so., LXXXVI., 144, mentions a case reported by a French physician, of a person bitten by a viper, in which the very grave symptoms developed had been cured by the administration of jaborandi, which produced copious salivation and perspiration, the dangerous effects of the venom gradually disappearing.

This case was looked up and was found in the *Gaz. Hebd. de de Med. et Chir.*, Par., 1882, XIX. 835, the reporter being Dr. Josso. He states that the patient was bitten by a viper between the thumb and index finger, and that when called to see her, all the characteristic dangerous symptoms of poisoning from snake venom were present, notwithstanding that phenic acid had been freely used as a supposed antidote. Having seen an account of the use of jaborandi by the South Americans in snake bite, he determined to give it a trial, and four grammes of the leaves were infused in a glass of water and given at 2 P. M. of the 13th inst., and on the 14th the patient was well with the exception of pains in the arms and some swelling, which lasted for three weeks after the accident. As already stated, copious salivation and perspiration were produced, but no mention is made of any action upon the kidneys. As no other cases had been reported, and the writer being aware that venom was supposed to be eliminated by the skin and kidneys, he determined to examine the subject thoroughly. The testimony, so far as could be ascertained, is as follows:

Dr. B. S. Barton in "An account of the most effective means of preventing the deleterious consequences of the bite of the *Crotalus horridus* or rattlesnake" (sm. 4to. Phila., 1792), speaks of the use of the common garden rue (*Ruta Graveolens*) as used by the Indians of New Jersey to produce copious perspiration as a cure for rattler's bite, giving two tablespoonfuls of the juice every two hours until violent sweating was produced. The author thinks it may have been of service. In some cases after a bite, a ligature was applied above the injured part, wound scarified, and salt and gunpowder laid in the wound, over the whole being bound a piece of white walnut bark (*Juglans alba.*) Early settlers do this. The salt and gunpowder excite a discharge of blood from the scarified part, especially of serum, and the white walnut bark possesses the evacuant power of cantharides, and contributes to the further discharge of the serum, and with it the snake poison. He gives quite a long list of plants which have been used and recommended.

Dr. A. Coutance, in his work entitled "Venins et poisons," 8, Paris, 1888, p. 178–179, speaking of a dog bitten to death by a *fer de lance* says: "A cubic centimeter of urine from a dog, dead from the bite of a *Trigonocephalus*, was injected beneath the skin of a rat, which died the next morning. The kidneys are therefore, as believed by Lauder Brunton and Fayrer, a means by which serpent venom is eliminated. Richard Balsamos killed pigeons by inoculating them with the urine of dogs which had been bitten in India by venomous sea snakes, but it is a question if normal urine might not produce the same effect by reason of the ptomaines contained therein."

As some non-professional readers may care to know what jaborandi is, and what effect is produced by it, the following short summary is given:

Jaborandi is an extract made from dry leaves of *Pilocarpus pennatifolius*, a South American plant, its properties being due to a volatile oil and two alkaloids, pilocarpine and jaborine.

Dose: Extract, gr. ii-x.
Dose: Infusion, f. oz. ss.
Dose: Pilocarpine nit., gr. ¼-ss.
Dose: Tincture of jaborandi, U. S. Ph., f. oz. ½-1.
Dose: Ext. pilocarpi fl., M. 5-60.

"Pilocarpine stimulates the peripheral terminations of efferent nerves going to glands, and first stimulates and then paralyzes the efferent nerves going to structures composed of involuntary muscular fiber. In large doses it lessens, but does not quite destroy the irritability of voluntary muscles and motive nerves."—(Lauder Brunton.) It increases flow of saliva enormously, the secretion of sweat and excites the secretion of tears, cerumen in ears, mucus from nose and from bronchial mucous membrane, of gastric juice, intestinal juice and urine from the kidneys. Upon the circulation: Vessels become dilated at first, pulse rapid, feeling of heat over the body. Blood pressure falls a little at first with quicker pulse and rises with a slower pulse. Respiration is increased, with dyspnœa. Is used as a cardiac stimulant when digitalis fails."

Now, as will be seen from these statements, this South American plant really seems to possess all those properties which might be supposed necessary to constitute a true physiological antidote to serpent venom, and so far as our limited experiments go, there appears to be good warrant for such a belief, as in all of our experiments the so-called antidote was first tried on healthy animals, without producing any ill effects. The first experiment was as follows:

Nov. 28—12:20 A.M.—Injected 5 minims of solution rattlesnake venom into left leg of strong rabbit, following immediately by 10 drops of fluid ext. jaborandi, in 10 drops of water; and 10 drops jaborandi and ½ oz. water was forced into the animal's stomach with a syringe.

2:30 P.M.—Animal slightly lame in the injected leg, holds it up when walking; but eats well.

Nov. 29—11 A.M.—Animal still a little lame, slight swelling and tenderness of the injected leg—otherwise seems to be in good condition.

Nov. 30—11 A.M.—Animal in about the same condition as yesterday—but improving.

Dec. 1—11 A.M.—Animal slightly lame; a hard tumor formed at the seat of injection.

Dec. 2—11 A.M.—Animal in same condition as yesterday; appetite normal.

Dec. 5—Swelling entirely gone, animal perfectly well.

It was noticed in this case that the animal urinated freely and very frequently, and that the mouth and nostrils were very moist. Chickens and pigeons being peculiarily susceptible to venom it was determined to try the effect of the jaborandi upon them, and on

Dec. 3—12:30 P.M.—Injected 5 minims of *Crotalus* venom into the leg of a chicken, followed by 10 minims of fl. ext. jaborandi, in water, by the stomach.

1 P.M.—Chicken appeared not so well, lying down. Gave 10 minims more of jaborandi in stomach.

3 P.M.—Chicken standing up, and feathers drooping. Does not seem very sick.

Dec. 5—10 A.M.—Chicken found dead, probably died during the night, as it was alive yesterday (Sunday) at 1 P.M.

In this case it may have been that not enough of the jaborandi was given to overcome the double lethal dose of the venom, but the experiment shows that life was prolonged after a dose of the venom which if allowed to act without hindrance would have destroyed life in about two hours. Another experiment was tried upon another fowl, a smaller dose of venom and a larger amount of jaborandi being given, but the chicken only lived two days. These two experiments would seem to show that in the case of fowls poisoned by serpent venom, jaborandi has only the effect of prolonging life. To verify the former experiment upon a rabbit it was resolved to again try the antidotal effect of the drug with the following result:

Dec. 5—12:05 P.M.—Injected 10 minims of rattlesnake venom solution into right leg of rabbit, followed by 15 minims of fl. ext. jaborandi; also give 15 drops jaborandi, in water, in stomach.

12:15 P.M.—Rabbit sluggish and indisposed to move, Respiration hurried, and animal seems very sick.

12:30 P.M.—Gave 15 minims more of jaborandi hypodermically.

Dec. 6—Rabbit appears perfectly well and is eating. Copious discharge of serum from wounds made by syringe, and a good deal of urination.

Dec. 8—Rabbit appears perfectly well, but has a healthy looking raw surface near point of injection on leg, which is healing.

Dec. 10—Rabbit well, excepting ulcer, which is healing.

Dec. 12—Perfectly well.

One more experiment was tried upon another rabbit, in which a fourfold lethal dose of the venom was injected, viz., 20 minims followed by 60 minims, at intervals, of jaborandi, with 60 by stomach, the animal recovering perfectly. From the foregoing experiments with the fluid extract of jaborandi it will be seen that while this substance appears to have antidotal effects upon rabbits, in fowls it fails, as has already been stated, but it is intended to pursue this line of experimentation still further, especially with the active principle known as pilocarpine. It may be mentioned that a medical man of Washington city is so convinced of the efficiency of the jaborandi that he has offered himself for the purpose of an experiment with venom, and in addition to this offer, the writer has received a communication from a person in Ohio, also, proposing to submit to the test. Until we have experimented further, however, the scientific devotion of these gentlemen will not be tried.

(*To be continued.*)

THE THERAPEUTIC VALUE OF WATER.

By Dr. Anacker.

(Translated from the *Thiezarzt* by F. W. Turner, Ph.G., Student.)

The employment of water in cases of sickness dates back about two thousand years, when Petron established his famous "cold water cure" system. Later on Musa, and recently Hahn and Priessnitz brought it into fresh repute.

Its curative power depends principally on the temperature at which it is used, and also on its solvent power on organic and inorganic bodies. The cold water cure consists in drinking water and in wrapping the body in wet linen sheets which are covered with woolen blankets till perspiration ensues, this procedure being followed by cold baths and brisk bodily movements. No doubt Priessnitz claimed too much when he pronounced water to be the universal remedy for disease, since there is no remedy which possesses the virtues of a panacea. We meet with numerous difficulties in the systematic application of cold water in veterinary practice, for the reason that hydrotherapy has had but a limited employment in the treatment of domestic animals.

Water acts locally according to its temperature. Cold water condenses the organic fibres and the vascular membranes, producing an invigorating effect upon the relaxed tissue, especially on the skin, muscles and sinews, and drives the blood out of the vessels, the parts becoming anæmic, and their temperature lowered. Water acts as a refrigerant and diminishes pains in inflamed parts. A long continued employment of cold produces reflex trembling, a decrease of the respiration and of the action of the heart, and increases the pressure of the blood by driving it from the periphery to the internal parts. As a drink, water not only reduces the temperature of the stomach and intestinal canals, but of the whole body, through its absorption into the blood. This becomes diluted, and, as in the case of all excretions, histogenetic changes take place more rapidly, the urine is discharged more copiously and the fæces may be diluted to an actual diarrhœa. The lungs, kidneys, skin and intestines eliminate excessive quantities of water, if the latter has been taken in too large a quantity. Warm water softens and relaxes the organic fibres; when given internally it acts as a diaphoretic, and consequently is beneficial in the first stages of rheumatic and catarrhal troubles. Larger quantities of warm water, when introduced into the stomach of the dog, cat or pig, produce vomiting. This fact deserves our attention in cases of poisoning, where it at once dilutes the poison, neutralizing and to some extent eliminating it. Hot water vapor at a temperature of 180° to 220° Fahrenheit destroys in five to thirty minutes all infectious substances, for which reason it is a reliable disinfectant. Cold washings and cold baths strengthen the skin and make it more resistent to changes in the temperature and to climatic influences. In cool weather it is necessary to rub the bathed or washed parts dry. Cold washings of the soles and hoofs of horses is very beneficial after a day's work on hard paved streets; it gives great relief to the relaxed and fatigued state of the extremities.

Superficial bleeding may be stopped by dropping cold water on the bleeding surface, because the small capillary vessels will contract sufficiently to help the formation of a blood clot, whereas bleeding from larger vessels may be augmented for the reason that the water washes away the blood and stops the formation of a clot. Snow and ice possess, on account of their lower temperature, more energetic astringent, hæmostatic and antiphlogistic properties. Cold water is frequently employed as a foot bath, or as a poultice in inflamed conditions of external and internal parts and organs of the animal body. In making these applications care should be taken to renew them as soon as they become warm, and that they be continued until the inflamed tension in the affected parts is relieved and the pain subdued.

The water itself should be renewed as soon as it gets warm. The addition of vinegar and neutral salts lowers the temperature of the water and increases its solvent power, which is of importance, in cases of bruises, for the absorption of coagulated blood. Applications of cold water are used also in cooling the head in inflammation of the brain, in inflammation of the eyes, in pneumonia, in peritonitis, in inflamed and paralytic conditions of the spinal cord, and in enteritis by using enemata of cold water. Applications of cold water are of vital importance in high fevers (106° Fahrenheit), because they reduce the temperature of the body and increase the strength of the patient. They also prove very beneficial in tympanitis, by condensing the gases present in the digestive canal and toning the seemingly paralyzed and weakened muscles of the intestines, and in this manner help to expel the gas, per os or anum.

Leister's cooling apparatus, composed of a number of small flexible metallic tubes, fixed or bandaged to the injured part and admitting a continuous stream of cold water, has been used with success in laminitis, in sprains of the fetlock joint, in inflammation of the sinews, muscles or articulations of the extremities, and in cases of fracture of the bones.

Oxygenated water, or the peroxide of hydrogen, destroys bacteria and stops fermentation. Diluted it may be used in the treatment of old and indolent wounds and ulcers, suppurating ears and genitals, in catarrh of the bladder and in diphtheria. It should, whenever possible, be applied on compresses and covered with oiled silk to prevent evaporation and decomposition. Damp heat relaxes the tissues and promotes absorption, relieves the inflamed tension, and consequently subdues the pain, besides rendering the parts to which damp heat has been applied more plethoric, because the heat relaxes the vascular membranes and blood enters more freely. The result of this is a more active circulation of the blood and chyle and improved nourishment and increased absorption of fluid matters. Warm baths are of service in cases of atrophy and callosity. The addition of carbonate of potash or soda, or soap, increases its solvent power in chronic and stubborn conditions. The inhalation of hot water vapor moderates general sensibility and assists in the elimination or expectoration of mucus in inflammatory catarrhal troubles of the larynx and pharynx. Abundant drinks of cold water do good service in all feverish diseases, and generally patients will drink pure cold water with relish, nor should they be stinted in the supply. In hydræmic and dropsical troubles, however, and in diarrhœa, the use of water as a beverage should be restricted as much as possible, because it dilutes the blood and increases the excretion through the skin, kidneys and intestines. Pachyaema, polychylia, tendency to congestions and apoplexy, exanthemata, infectious substances in the blood, excessive acidity of the stomach, slow digestion, inflammation of the inner organs, are diseases in which a copious use of water is indicated.

REPORTS OF CASES.

AMERICAN VETERINARY HOSPITAL.

COMPOUND COMMINUTED FRACTURE OF THE TEMPORAL, AND COMMINUTED FRACTURE OF THE SPHENOID BONE.

By G. A. Lathrope, D.V.S., House Surgeon.

The subject of this case was a roan gelding used for draft purposes, being at the time employed in drawing stone from a cellar; he stood in the street while a blast was being set off, where it was supposed he was out of danger, but a stone was thrown from the blast striking him on the left side of the head; he immediately fell and was unable to rise. They thinking he was only stunned, administered one quart of whiskey, but as he did not rally he was brought to the hospital in an ambulance; after being admitted, as minute an examination as possible was made, he being very violent in his struggles. It was found that he had received a wound on the external face of the zygomatic process of the temporal bone, making an incision in the skin of about two inches in length; crepitation could be detected and a diagnosis was made at the time of a compound fracture of the temporal bone complicated with concussion of the brain; respirations were increased and stertorous; was very excitable; if touched would neigh and try to rise; would lie apparently comatose for a few minutes, then would become violent, his efforts seeming to be to acquire a standing position; he would raise his head and shoulders, but seemed unable to gather his legs under him, and if assistance was given to him, became more violent than ever. These symptoms continued throughout the night and were the same in the morning, except that there was considerable discharge from the nostrils; evidently paralysis of the throat was present, and when the whiskey was administered went down the trachea causing the discharge. Upon the consent of the owner he was destroyed and a post mortem held. Upon removing the skin and tissue, which was very much infiltrated with blood, it was found that he had received a compound comminuted fracture of the zygomatic process of the temporal bone, but this of itself was not enough to account for the brain lesions presented by the symptoms, and upon boiling the head it was found that he had also received a comminuted fracture of the left wing of the sphenoid bone, with displacement, which accounted for the brain lesions. It was also discovered that he was suffering with osteo porosis, which had predisposed him to fracture.

AFTER-EFFECTS OF NEUROTOMY ON A PUNCTURED WOUND OF THE FOOT—SLOUGHING OF THE SAME—DEATH.

By Tritschler, D.V.S., House Surgeon.

The following case, although presenting nothing unusual or uncommon, may prove of interest, since it often serves as one of the arguments which have been brought forward in opposition to the operation of neurotomy, and which have tended to bring that procedure into disrepute with certain parties.

The subject was a chestnut stallion, a runner, four years of age. Attention was first called to him on the 6th of September, for a supposed slight thickening of the near fore fetlock, unaccompanied by lameness. Upon examining the foot a slight oozing of suppuration was detected at the glome of the frog, with a punctured wound at the side of the frog, midway between its base and apex, the inner side of the sole and the frog being undermined with pus, the coronary structure being also somewhat swollen, evidently induced by accumulations of puriform matter.

The cicatrixes of neurotomy were located rather high, and their presence explained why the real trouble was not suspected by the owner, the punctured wound undoubtedly being of some standing.

Incidentally, it may be remarked that this same patient was brought to the notice of the hospital staff on the 17th of May last for a ring-bone, but refused the operation of neurotomy. Although every effort was made to save his foot, the case went from bad to worse, the separation between hair and horn increasing, the coronet had numerous abscesses from large pieces of the plantar cushion becoming gangrenous, the leg finally becoming greatly swollen from the foot to the elbow, temperature becoming elevated but the appetite throughout remaining unimpaired, and when the foot was about to drop off the owner consented to have him destroyed, which was done on the 15th of September.

Upon post mortem examination, the subcutaneous tissue of the entire limb was found infiltrated with serum, the leg below the knee thickened by plastic deposits, the horny wall almost detached, the laminæ detached, the inner wing of the os pedis necrosed, the bone fractured in two pieces in its center, the plantar cushion and the remainder of the tissues of the foot in a disintegrated gangrenous condition. The navicular bone on both its faces covered with dark blue spots. The os coronæ had a liberal depost of bony material, and both nerves at their point of excision presented a well-marked neuroma.

COMPOUND FRACTURE OF RADIUS IN TWO-YEAR-OLD FILLY, AMPUTATION AND RECOVERY.

By Chas. C. McLean, V.S., (Meadville, Pa.)

August 24, I was called to the breeding establishment of Messrs. C. and R. A. Stratton, at Evansburg, Penn., to see a two-year old filly called Bonnie Janet, sired by Hartwood, he by Harold, dam of filly Bonnie Bessie, by Abdallah Star. On arrival, I found the mare in a large pasture over half a mile from the stable with a compound fractured forearm, both ends of fracture protruding. After advising owners that the only possible means of saving the filly for a brood mare would be amputation of the limb, they made preparations to have her removed to the stable, which was done at once; on arrival, she was cast and sulph. eth. used for anæsthesia; a rapid circular incision with a long-bladed knife on each side made a good flap and left a nice cushion. The anterior and posterior radial arteries were ligated; radius sawed as high as flaps would allow; a large twitch was used for a tourniquet; a cold solution of mercuric bichloride subdued a slight hemorrhage of small vessels; wound thoroughly dusted with iodoform, and flaps closed with strong gut and wire sutures, leaving a three inch space in middle of stumps for drainage; a cold water bandage was applied after dusting entire stump with iodoform, and hobbles and rope were removed; she lay perfectly quiet for one hour and thirty minutes, except some trembling of shoulder muscles, and then made an effort to regain a standing position; on the third attempt she was assisted by three very able stablemen, and was at once led to a large box-stall which had been well cleaned and disinfected; she stood for one hour and ate a hearty meal, and then lay down and rested quite well until 12 p. m.

Being of the same opinion of Prof. Huidekoper of Pennsylvania University about his amputation at Avondale, "that the subject should be taught to depend on herself at once," the slings were not used except on three occasions; when she stood too long, "at one time fourteen hours," they were used to lay her down; on second day she got up without assistance and has continued to do so each day, and as frequently as she desired, and she can get up just as quick as any horse with two fore legs; moves about the stall in a manner surprising to the many curious visitors who have called to see a three-legged horse. The sutures remained twelve days; union of flaps progressed rapidly; suppuration very slight; the swelling from fracture decreased rapidly after operation; dressings consisted of cold water bandages, iodoform freely, and injections every two hours in drainage hole of hydrarg. per chl., one part in 1,000 of water; her diet consisted of green corn, apples and boiled grain liberally, and the stable surroundings kept unusually clean. She exhibited a great degree of intelligence on several occasions; in lying down she would forget and drop to the left side, but when she got ready to rise she would roll over on side of remaining member and rise without difficulty; her temperature never rose above 101°; pulse after operation 82°, but day following had dropped to 64° and continued to fall to 42°, at which it has remained. The mastoidohumeralis muscle has developed *greatly*, also all muscles of right extremity.

In conclusion, I would say that I am of the opinion that many a valuable stock animal can be saved by amputation when the fracture will not justify treatment by usual methods, and that the wholesale slaughter of animals with broken limbs is utterly uncalled for when breed is valuable for stock purposes; with posterior extremity there may be a difference with horses, but in cattle I have amputated a hind leg with the best of satisfaction on two occasions.

PATHOLOGICAL PHYSIOLOGY.

SIMILARITY OF SPONTANEOUS AND EXPERIMENTAL TETANUS.

By using the dust of hay, Mr. Rietsch has confirmed the experiments of Nicolaier, Beumer and others, upon experimental lock-jaw, and has developed in a donkey the typical tetanus of equines, the dust being inserted under the skin of four cobayes, which after four or five days died of tetanus. A little pus, taken from these at the point of inoculation, was then used to inoculate two other guinea pigs, both of which died of tetanus thirty hours after. A very small quantity of pus taken from the last two was then used in the inoculation of two others, of which only one presented tetanic symptoms, but recovered. With the pus of one of the last dead guinea pigs cultures were made with gelatine and with serum. The first were negative, but the second were at one time very rich in the bacilli of tetanus, and these were used to inoculate on the flat of the thigh a donkey, which after twenty-two days showed lock-jaw and died. Material was obtained from him for the inoculation of eight rabbits, and of these two remained healthy, two died of scepticæmia without tetanic symptoms, and the last four died of lock-jaw.

The conclusions reached are, 1st, that the experimental tetanus of equines seems to differ in nothing from the spontaneous disease; 2d, that an actual identity exists between the spontaneous and the experimental disease, and 3d, that tetanic virus may be found in the earth and in dusts.—*Revue Scientifique.*

PATHOLOGICAL ANATOMY.

REPAIR OF ARTERIES AFTER LIGATION.

By J. Collins Warren.

The author has studied the mode of the cicatrization of arteries, from the first step to the final conclusion of the reparative process, and from numerous experiments upon horses and dogs, has concluded that the process of repair is different from that usually described and accepted by classic authors. This process is divided by him into three periods. In the first, some two or three weeks in duration, are included the modifications observed immediately after the application of the ligature, and during the times of the gradual separation of the arterial walls. The second, covering about one month, comprehends the formation of an external and internal callus. The third covers the gradual resorption of this and the formation of the definitive cicatrix.

First Period. The complete rupture of the internal and complete or incomplete of the middle coat first occurs; the clot is always present, even when antiseptic measures are employed. Soon after the application of the ligature, there is an accumulation of leucocytes near it, and the knot of the thread is englobed in a mass of embryonary tissue surrounding the ends of the ligature. There is a common proliferation of the elements of the internal coat, especially at the periphical end, and around the point of the clot. Abrasions of the elastic internal coating and granulations of the middle coat exist, but this cellular proliferation remains insignificant, and seems to be principally designed to unite the clot more intimately to the internal face of the vessel. Internally, the embryonary tissue has accumulated sufficiently to envelop the ligation with a fusiform mass. If the wound heals by the first intention, it forms a thick true muff, or external callus. The cells that compose it penetrate between the fibres of the adventitious tissue, and disintegrate and resorb the fasciculus of fibres which are surrounded by the ligature. Both ends of the blood vessel separate, ending by a well closed cul-de-sac, and the encysted thread is resorbed or eliminated.

Second Period. During the third week the embryonary tissue has so far penetrated the internal and middle coats that they separate slightly, the extremities of the vessels opening and allowing this embryonary tissue to enter the interior of the vessel. The critical moment is that when secondary hemorrhage occurs, which may be anticipated in case of the suppuration of the external callus. The new tissue penetrates the inferior layers of the callus, and disintegrates it in forming an internal callus, which is rich in capillaries derived from the external callus.

Third Period. The temporary tissue is now resorbed, and is succeeded by a definitive cicatricial structure. While the inflammatory tissue is resorbed on the outside of the vessel, a cellular differentiation takes place on the inside. Fusiform cells, with nuclei in rods, appear and remain, to form in the cicatrization, *a new muscular layer.* These, in the places where the internal elastic coat is abraded, mingle with those of the middle coat, meeting each other at right angles.

The cicatrix is always so arranged as to produce a gradual stricture of the artery, and to change it into arterial substance. In very large arteries the cicatrix elongates and is transformed into cavernous tissue.

The researches of the author tend to show that, contrary to the old theory which attributes the obliteration to the thickening of the internal coat, it is the middle coat which contributes the largest share towards furnishing conjunctive tissue and muscular fibre to the complete cicatrix. The antiseptic treatment offers a better guarantee for the success of the reparative process than all other means now known.—*Revue des Sciences Med.*

EXPERIMENTAL PATHOLOGY.

ON THE TRANSMISSION OF PARASITIC ORGANISMS THROUGH HEREDITY.

By Max Wolff.

The author has studied the question of the passage of bacterias from the mother to the fœtus, with the microbes of anthrax, vaccinia, variola and tuberculosis, and he refuses to sanction the theory.

Fœtuses of guinea-pigs and of rabbits whose mothers had been inoculated with the bacteridie of anthrax, were not infected, the microscope or various cultures failing to show the presence of the bacteridie. In vaccinia he has vaccinated pregnant women, and when the vaccine had taken effect has vaccinated the child several days after birth. The result was a characteristic eruption. For variola, he shows that it is only in a few rare cases that the children of variolous mothers are born with the variolic eruptions. And for tuberculosis he has inoculated female animals both before and during pregnancy, and never met with tuberculous products. He considers, therefore, that for these diseases, though transmission may be possible, it is exceedingly rare, and that in man, especially in tuberculosis, the child is infected only after birth, when the infection could take place, not only through the respiratory passages, but also through cutaneous lesions, or the eruptions so common in children.—*Rev. des Scien. Med.*

BACTERIES IN MILK.

By Loeffler.

Pasteur had already observed that in boiled milk, in which the alkaline reaction still exists, caseine can be precipitated, and at the same time vibrions are developed, which are not killed except at a temperature of 105°.

Loeffler has made a careful study of those bacilli whose spores resisted boiling, and which have the property not only to precipitate, but also to peptonize the caseine of milk. By experimenting with cultures he has found that these were composed of very numerous species, varying even according as the milk was obtained from different cows. He described, however, only four principal and most common species:

1st. The bacillus of potatoes (of Flugge).

2d. The gummy bacillus, so named by Loeffler on account of the appearance of its cultures on potatoes.

3d. The white bacillus.

4th. The butyric bacillus of Hueppe, comparatively rare.

Cultures from potatoes are proved to be the best adapted for distinguishing these four bacilli.—*Ibid.*

EXPERIMENTS ON THE TRANSMISSION OF DIPHTHERIA TO ANIMALS.

By F. Penzoldt.

Rabbits, chickens, but especially pigeons, were used in these experiments, which were divided into four series:

1st. By the direct inoculation of animals with the false membrane of man.

2d. The culture of the micro-organisms of the products taken from pigeons, and attempts to inoculate.

3d. Cultures of the micro-organisms found in false membrane of diphtheria, and experiments in inoculation.

4th. Culture of the micro-organisms of the blood of individuals who had died from diphtheria, and experiments of inoculation with the same.

The inoculations were made either in the mucous of the beak, or the conjunctiva, or in the trachea, but no typical diphtheria could be produced, although quite often an appearance of yellowish deposits, resting on an elevated red surface, could be detected. These were seen after inoculation made with the false membranes, or cocci or bacterias obtained by cultures. Upon the conjunctiva and the trachea some little false membrane, either loose or adherent, was produced, the specific nature of which is very doubtful.

In blood cultures Penzoldt has seen diverse bacilli, some analogous to those of tuberculosis, other virgule-shaped, and still others curved like an S. They were very small cocci. A pigeon inoculated with these cultures was affected with paralysis of the wings and legs, and died after three weeks.

Penzoldt asks if diphtheria is a disease of uniform character, or if it may not be the result of different pathological factors, alike only in the clinical manifestations which they produce.—*Ibid.*

ON THE PASSAGE OF BACILLI THROUGH THE KIDNEYS.

By Fr. Schweitzer.

To ascertain whether bacterias may pass through the kidneys, the author has experimented upon animals by injecting in the blood a bacillus obtained from the pus of ozena, coloring gelatine and agar in green. He calls it the *green bacillus.* He injected it in the renal artery, and examined the urine taken from a fistula through the ureters. Cultures of this urine proved fertile. Similar results were obtained with the rabbit and the cat.

He then removed one kidney, and when the animal had recovered and the other kidney became hypertrophied he injected the bacillus into the carotid. Urine taken from a fistula of the ureters in this case also gave fertile cultures.

To ascertain whether micro-organisms can pass from the urinary canals into the blood, an injection of the green bacillus was made into the left ureter, and cultures made with blood from the right kidney proved fertile. This experiment proves that bacilli and micrococci can readily pass into the blood when once they have reached the pelvis of the kidney. But by what route do bacilli pass from the blood into the urinary tracts? Sections of the organ show that the micro-organisms are always abundant in the glomerules and in the space existing between them and the capsule of Bowman, as well as in the blood vessels and at the beginning of the twisted canals. They are few in the perivascular connective tissue.

The author comes to the conclusion that micro organisms can pass intact through the kidneys, but in masses in the urine as soon as a certain number of glomerules have become altered by the contact of the bacilli.—*Ibid.*

EXTRACTS FROM FOREIGN JOURNALS.

LARGE CALCULOUS MASS IN THE BLADDER OF A HORSE.

By Mr. L. Soula.

Deposits of a sedimentary nature are not uncommon in the bladders of solipeds, and a number of instances of their occurrence are recorded by Hering, Verheyen, Lafosse and Zundel. The author, however, reports one of which the dimensions and weight are far above all those before on record, its weight being not less than 15 kilogrammes, or about 30 pounds. It was found at post-mortem of an animal which had been destroyed on account of his age. The mass was of a light yellow color, with a strong odor of urine, irregularly ovoid in shape, slightly flattened from above, large on its anterior extremity, and ending in a blunt point at the posterior. It measured about 15 inches in length, 12 in width, and 20 in thickness. On its superior face it showed a depression, or kind of cavity, representing the entire dimensions of the urinary reservoir. The ureters opened into the bladder on its level. The analysis of the mass gave 105 parts of water, 188 of organic substances, 607 of carbonate of lime, 72 of phosphates, and 27 of ammoniacal salts and sundries.—*Revue Veterinaire.*

URINARY CALCULUS AND CANCER OF THE BLADDER IN A MARE.

By Mr. A. Labat.

Out of several cases of lithotrity in the horse and in mares, reported by the author, the one under notice presents interesting features on account of the presence of the two diseases, of which one must necessarily almost immediately prove fatal, unless relief were promptly obtained, while the other could not at the best promise more than perhaps five or six months of labor and suffering.

The mare, an animal 15 years old, had for some time been making violent efforts to micturate, the meatus being exposed during the attempt, red and tumefied, and only some high colored and strongly odorous urine escaping. After a day's work she passed blood. Rectal examination revealed the presence of a stone, which was easily felt with the finger introduced in the meatus, but at the same time the bladder was felt full of polypous vegetation. The calculus was removed after being crushed, and it was found necessary to enlarge the urethra by two incisions while accomplishing it. Its weight was 92 grammes, or about 3 ounces. The animal recovered rapidly and resumed her work. She kept at it for a period of six or seven months, when she died. At the post-mortem the bladder was found full of polyps of various sizes and forms, of a greyish color and lardaceous in aspect. Both kidneys also proved to be diseased with encephaloid carcinomatous degeneration.—*Ibid.*

OSTEOMALACIA IN A MARE.

By Mr. L. Soula.

Under this denomination the author gives a description of a well-observed case of the form of disease well known to American veterinarians under the name of osteo-porosis. Though it may be a disease of rare occurrence in France, we find it on the contrary, very common on this continent. The history of the case referred to presents no features of particular interest to American veterinarians, so far as concerns the slow development of the lesions. The symptoms and mode of manifestations were those usually observed, of general alterations of the organism, variations of appetite, difficulty of digestion, a rheumatoid form of lameness, enlargement of the bones of the head, disease of the teeth, &c., and, finally, death in a condition of excessive marasmus. The post-mortem appearances were such as are generally discovered, the head especially presenting an unusual deformity, due to the enlargement of the bones of the skull. This affection has already become a subject of study by French veterinarians, principally Messrs. Laquerriere and Germain, under the name of osteomalacia.—*Ibid.*

STRANGULATED INGUINAL HERNIA IN A GELDING.

By Mr. Borie.

A colt of four years presented the characteristic symptoms of standing in a fixed position, as when about to urinate, and gazing fixedly towards his flank. He had been troubled with colics during the day, but did not lie down nor roll. The penis hung out of the sheath, and the visible mucous membranes were highly injested. A suspicion of cystic trouble or urinary calculi occurred, but a rectal examination permitted an accurate diagnosis to be made. The superior inguinal opening was found largely dilated, and a portion of intestines was engorged in it. Manipulation of the left scrotal region revealed the presence of an ovoid tumor, puffy, somewhat hard, and somewhat resembling a testicle—it was a strangulated inguinal hernia. All attempts at reduction having failed, the animal was thrown and operated on in the usual manner without extraordinary difficulty. Recovery took place in about 12 days. The principal interest of this case arises from the fact of the occurrence of the disease in a gelding, a class of animals very rarely suffering from it. It is noticeable also for the illustration which it offers of the possibility of easily committing an error of diagnosis when rectal and inguinal examination is neglected, through inadvertence or from other cause.—*Ibid.*

BIBLIOGRAPHY.

SWINE PLAGUE, ITS CAUSES, NATURE AND PREVENTION, by Frederick S. Billings, Director of the Patho-Biological Laboratory of the University of Nebraska, Agricultural Experimental Station.

Our acknowledgments are due to the donor for a copy of this handsomely made up volume of over 400 pages. The title of the book, of course, indicates the subject of which its treats, and the readers of the REVIEW have already become acquainted with much of its contents through our own pages, in which many of the articles of Director Billings have appeared in previous numbers. The book itself shows how large an amount of work has been performed by the author—we mean original work—and a great deal of credit must be accorded to him for what he has accomplished. We believe that it would have been better if portions of the first part had been omitted, and its criticism been of a different kind, and we think that the truth would not only not have suffered from it, but that the effect would have been quite the contrary. This first part treats of the literature, history, geographical distribution and etiology of swine plague.

In the second, the reader is instructed in the pathological anatomy of the disease, and may study the minute reports of more than thirty post-mortem examinations. These are followed by a comparison of this with similar diseases observed in various countries of Europe. The views of Professors Walley, Loeffler, Schutz, Roloff, Bang, Cornil and Chantemesse are presented, and are full of interest to veterinarians.

The third part refers to the nature, symptoms, diagnosis and prevention of this swine scourge, concerning which so much has been written, and in treating which, we still seem, with all that is known of it, to have failed, and especially in our efforts to discover a positive prophylaxy. A number of wood cuts appear at the end of the book, designed to illustrate the remarks contained in the body of the work.

SANITARY BULLETIN.

SINGULAR STRANGLES.—An extensive outbreak of this disease is reported in Minnesota.

GLANDERS.—The following report is made relating to glanders, in the official publication of the State Board of Health of Minnesota: During the month of July there were forty-six cases of glanders remaining isolated or not accounted for. Six were reported during the month; thirteen were killed and three were released. There remained in August, thirty-six cases from the month previous, and ten were reported during the month; twelve were killed and five released. There remained on the 1st of September, twenty-nine cases isolated or not accounted for.

PROFESSIONAL ITEM.

Among the papers to be read at the next meeting of the American Public Health Association, the following promise to prove of special interest to veterinarians: "Tuberculosis; its Origin, Detection and Control," by D. E. Salmon, V.S., Chief of the Bureau of Animal Industry. "Veterinary Sanitary Work in Wisconsin, with special reference to Disease communicable to Man," by V. T. Atkinson, V.S., State Veterinarian of that State. "The Relations of Bacteriology to the Discovery and Prevention of Causes of Infection among Men and Animals," by Theobold Smith, M.D., of the Bureau of Animal Industry.

SOCIETY MEETINGS.

UNITED STATES VETERINARY MEDICAL ASSOCIATION.

The comitia minora of the United States Veterinary Medical Association met at the Rossmore Hotel, New York City, at 9:45 A. M., on September 18th, 1888; and at 10:30 A. M. reported to the general meeting, at which President Huidekoper presided.

The roll call of the 25th Annual Meeting was answered by forty-three members. After the approval of the minutes of the previous meeting, the comitia minora recommended for membership all applicants for membership who were graduates, except Dr. Ward, of Baltimore, whose application was refused on the grounds of unprofessional conduct in his methods of advertising. The name of Dr. Edgar R. Marlin, of Philadelphia, was laid over until the next meeting on the ground of similar charges. Dr. Middleton was admitted to membership.

The Association approved the recommendation of the committee to expel from membership Drs. Spranklin of Baltimore, and Jones of Long Island, for violations of Code of Ethics.

Dr. Coates, Chairman of Committee on Intelligence and Education, reported at some length on recent legislation in New York State in the interest of veterinarians; referred to the death of Crowley in Central Park, from tuberculosis, and led on to the great importance of the recent Congress at Paris, called to consider the great dangers of its transmissibility from animals to man, through the ingestion of meat and milk; noted the establishment of chairs of veterinary science at Quebec, Canada, and at the State College in South Carolina.

Dr. Hoskins, Chairman of special committee to secure uniform standard for the different schools of veterinary science, announced another addition to the three-term schools.

Dr. Zuill, Chairman of Committee on Infectious and Contagious Diseases, commented upon the prevalence of contagious pleuro-pneumonia and tuberculosis, referring very forcibly to the dire need of legislative action relative to the checking of the progress of the latter disease, cited the dangerous extent of glanders and farcy in certain localities, particularly parts of Pennsylvania. Furnished statistics of the extent of anthrax, rabies and hog cholera. Extolled the beneficent work of Dr. Salmon and his able corps in the Bureau of Animal Industry.

On army legislation, Dr. Pendry, Chairman of Committee, reported the slow progress of the bill. He was followed by Dr. Huidekoper, who advised the recall of this present bill and its need of revision.

An election of officers for the ensuing year then took place, resulting as follows: President—Dr. R. S. Huidekoper, Philadelphia, Penn. Vice-President—Dr. D. J. Dixon, Hoboken, N. J. Secretary—Dr. W. Horace Hoskins, 12 S. 37th Street, Philadelphia, Penn. Treasurer—Dr. James L. Robertson, New York City. Comitia Minora: Drs. Zuill, McLean, Clement, Ross, Howard, Winchester and Wray.

A rising vote of thanks was unanimously tendered the retiring Secretary, Dr. Chas. B. Michener, for his zealous and efficients ervices.

Dr. R. S. Huidekoper read a very carefully prepared and highly interesting paper on the "Origin of the Domestication of the Horse."

The subject of Tuberculosis was then taken up, and after considerable discussion, a committee composed of Drs. Liautard, McLean and Clements, were named to draft a series of resolutions, relative to the rapid increase, the dangers from ingestion of meat and milk of tuberculous animals; the need of properly qualified veterinarians, as inspectors of dairies, markets and slaughter houses; instructing them to forward these resolutions to the Medical Congress in session at Washington, D. C., and a copy to all city, State and National Boards of Health.

Dr. J. C. Myers, of Cincinnatti, then referred to a recent article describing a disease known as "Mad Itch," which had been written by him about the years 1869 to 1871, during an enzootic outbreak in a distillery stable used for fattening purposes.

After a vote of thanks to the essayist, the meeting adjourned to meet in Boston the coming March.

In the evening a banquet was given at the Rossmore Hotel, where several toasts were responded to by invited guests and members, and all enjoyed the bountiful board so generously spread before them.

W. Horace Hoskins, *Secretary.*

AMERICAN VETERINARY REVIEW,

DECEMBER, 1888.

EDITORIAL.

LARYNGEAL SURGERY.—It excites much interest in veterinary circles—criticisms severe and uncalled for—Gunther's mode of operation—Stockfelt's—Professor Möeller's—it is not as new as first supposed—it is not a new field, properly speaking—discovered by the Germans—it is worked to-day by English veterinarians—our experiments—and our failures to relieve—complications that we have observed—let every one report the results they may obtain—both successful or unsuccessful. A NATIONAL PATHO-BIOLOGICAL LABORATORY.—Dr. F. S. Billings' new bill—its provisions—is it not a new plan to obtain the National Veterinary School?—if it is, the idea is good—if it is not, our regrets, but our wishes for success all the same. FIFTH INTERNATIONAL VETERINARY CONGRESS.—The event coming close to hand—shall American veterinary science be represented?—or will our State and National societies lose their opportunities?—work which is to be done—names of those who compose the various committees. ILLINOIS STATE VETERINARY MEDICAL ASSOCIATION.—The sixth annual meeting—numerous papers of interest—good work done—good example to follow. SURDITY IN HORSES.—A case of sudden deafness. THE SUBSCRIPTION PRICE OF THE REVIEW.—It is worth the price—or it is not—no more club rates—no reductions except in the future.

LARYNGEAL SURGERY.—The subject of laryngeal surgery for the relief of roaring has recently excited much interest in veterinary circles, and the English veterinary press, especially, has been filled with remarks bearing variously upon different aspects of the question. Some of the writers are quite severe and personal in their attacks, both upon the operation and the gentlemen who have of late brought it so prominently into notice. That interference with the knife, in cases of roaring, is not a new thing in the domain of veterinary surgery, is a fact well known to all veterinarians. The operation, as performed by Gunther as long ago as 1853, is described by Stockfelt as follows:[*] "The horse turned on his back, has his head and neck well stretched; an incision is made on the median line, dividing the cricoid cartilage and *several rings of the trachea*; the wound kept open by blunt hooks; the left cartilage was seized with a tenaculum, drawn down and a piece three-fourths of an inch in length and one inch in width cut out." It appears by this description that the entrance to the larynx is effected in a manner very different from that which Prof. Smith recommends and practices in his various modes of operating. Stockfelt recommends, later, the operation of arytenodectomy, the larynx having been entered somewhat in the same manner as by Gunther, and the incision of the median line involving the same structures as Dr. Fleming's methods, but *also, several rings of the trachea*.[†] Professor Möller agrees with Gunther, not only that the dyspnea is not caused by the transverse position of the vocal cord, but by the sinking of the arytenoid cartilage, and he is also of the opinion that, instead of removing this cartilage, it should be spared, and he therefore recommends one or the other of his own methods of operation.[‡] In the first it is his design to produce anchylosis of the articulation between the cricoid and the arytenoid cartilages, on the paralyzed side; and in the second, a severer mode, he aims to reduce the development of cicatricial structure in the atrophied crico-arytenoid muscle.

This brief review of laryngeal surgery shows, evidently, that for over thirty-five years the entrance into the larynx was already known, and had even been followed by some satisfactory results. The fact that nothing more has been accomplished in the same direction until recently may be accounted for by referring it to a disinclination on the part of veterinary practitioners to venture upon further experimentation, in consequence of their appreciation of the differences which exist in the various pathological changes in which the roaring originates, together with the practical difficulties in the way of positive diagnosis of the lesion itself.

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[*] Dan, VI., page 27.

[†] Chir. II.

[‡] Centralblatt, 1886.

This, however, does not justify the opposition which has been made to the operation described by Prof. Smith, nor does it excuse the sarcasms which have been levelled at the results, either reported or unreported, which have appeared. It is a new field or, rather, it is one which Gunther, Stockfelt and other German surgeons have discovered, in which English veterinarians are now working, and as with many other methods of surgical treatment, when first practiced, perfect results may not yet have become apparent. There is certainly one feature with which it may undeniably be credited. This is its simplicity and the comparative absence of danger attending the process, and of complications which may follow it. That these, however, cannot always be overlooked becomes evident from one of the reports published in the present number of the REVIEW, of a case upon which we experimented. It was our first case of this description. Of course it cannot be expected that every operation will succeed, and if we may found a judgment upon two other cases upon which we operated, and which are here reported by Dr. Tritschler, paralysis of the vocal cord was not the only cause of roaring. This fact, we believe, will in many cases cause the difficulty and constitute the objection to the operation. The three cases which are recorded in the present number of the REVIEW are not sufficient to condemn the operation, but they must be allowed their proper weight in deciding upon the future success and usefulness of a treatment, the adoption of which, after all, may prove to be of great advantage to all parties interested.

A NATIONAL PATHO-BIOLOGICAL LABORATORY.—Dr. F. S. Billings has favored us with a copy of a bill, of which he designs to procure the introduction before Congress at the coming session, and of which we will publish the entire text. It provides for an appropriation for the foundation of a National laboratory for the investigation of the nature of all contagious diseases, both of men and of animals, and in an accompanying circular, the learned director of the pathological laboratory of the State University of Nebraska makes the following synoptical suggestions:

1st. The bill arranges the work into the two distinct divisions of human and animal diseases, and thus at once creates a point of noble rivalry between them.

2d. It places it in charge of the Surgeon General of the Marine Hospital Service, thus supplying him with the means of acquiring a body of competent workers, with whom he may become acquainted beforehand.

3d. It gives him the world to choose from for directors of the two institutes, while it limits the selection of assistants to this country, thus providing the way for Americans of ability to rise to chief positions.

4th. It gives a chemist to each institute, thus keeping up the stimulating rivalry.

5th. It opens the way to independent workers, and thus increases the number, while the country has the benefit of the results.

6th. It opens the way for students, thus providing the means for Boards of Health and Medical Schools to obtain competent men, and stimulating research in all parts of the country.

7th. It tends to make our National capital a center of learning and culture, which should be the ambition of every citizen.

To many this plan will be a new idea, but in our view it is merely the suggestion of a new method of accomplishing the realization of a project of grand dimensions and vast import, for many years entertained by Dr. Billings, and consisting of nothing less than the foundation of a *National Veterinary School.* And why not? Such an institution has long been the ideal of Dr. Billings, and he does well to nourish it and seek its practical fulfillment. We feel sure that this new step is the right step in the right direction, and we hope it may lead to a splendid success. The bill provides for a large appropriation, an amount which, indeed, would give more funds than would be necessary for the purposes of a mere laboratory, and it provides also for such elements as would be strictly adapted to the use of a veterinary college. The details of the bill may be considered by some as including provisions of a superfluous character, and of course these, with all the rest, should be carefully considered.

Whatever may be the true object of Dr. Billings—even if it shall prove that we are mistaken in our suggestion touching a National school of veterinary education—we hope that it will meet with every merited success, and that it may not fail to receive a worthy share of consideration at the hands of our National legislators.

FIFTH INTERNATIONAL VETERINARY CONGRESS.— Only a few months now intervene before the occurrence of this important meeting, and if we may judge from the successes which have been achieved on former similar occasions, the coming event must prove to be one of great interest to veterinarians. We have already called the attention of American members of the profession to this meeting and we take this opportunity to renew our reminder. The days are gone by when veterinarians on this side of the Atlantic were obliged to remain ignorant of such gatherings, and now, with our well-filled ranks of practitioners, the various flourishing schools in different sections of the country, and the numerous veterinary societies of National and State organization in more or less active operation, our veterinary community finds itself resting under an obligation not easily evaded, of having a good representation present at the time and place appointed. We hope, therefore, to be able at an early date to record the names of the delegates who are to be deputed to personate the veterinary organization of America among their European brethren. Arrangements for the meeting are already completed, the various committees of administration have been appointed and the following list of questions for discussion has been circulated. The subjects are interesting and important.

1st. Tuberculosis, considered from the special points of view of sanitary police and alimentary hygiene.

2d. International sanitary system. Its utility and organization.

3d. Compensation in cases of slaughter; what are the means adopted for insuring its payment; a fund for epizootics; assurance.

4th. Inspection of meats.

5th. Prophylactic measures against contagious pleuro-pneumonia in cattle.

By resolution: 1st. Each question shall be first studied by three reporters of different nationalities. 2d. Each of these reporters shall make an independent statement of his views as to the solution of the question submitted to him. 3d. The second question, respecting the organization of the international sanitary service, shall be submitted to the consideration of five reporters.

The following gentlemen have been appointed reporters:

1*st question.* Messrs. Arloing, of Lyons; Lydtin, of Carlsruhe; Perronato, of Turin.

2d question. Messrs. Leblanc, of Paris; Neiman, of St. Petersburg; Remartinez, of Madrid; Roll, of Vienna; Thomassen, of Utrecht.

3d question. Messrs. Cope, of London; Delamotte, of Vincennes; Potterat, of Berne.

4th question. Messrs. Baillet, of Bordeaux; Müller, of Berlin; Van Hersten, of Brussels.

5th question. Messrs. Butel, of Meaux; Degive, of Brussels; Robinson, of Greenock.

ILLINOIS STATE VETERINARY MEDICAL ASSOCIATION.—The sixth annual meeting of this Association was held on the 16th and 17th of November at Chicago, the order of business having been so arranged as to occupy two days in the discussion and disposition of the subjects selected for consideration. Judging from the indications presented by the programme, with which through the kindness of the President and Secretary we have been furnished, the meeting must have been one of great interest to those who were so fortunate as to be present. The papers presented on the first day were: "An unusual sequel of tracheotomy"; "Erysipelas in horses and a pecular suppurative affection of the external lymphatics of cattle." The second day was occupied with papers on the "Uses of veratrum viride in veterinary practice"; "Parenchymatous degeneration of the kidney"; "Physiology of the spinal cord"; "Equine syphilis," by Dr. W. L. Williams. "Equine syphilis, with its importance to horse breeders, and the means of control," by Dr. Casewell; and a report of the autopsy on a mare affected with syphilis.

This Association means good work and, so far as we are able to judge, it offers an example to other State Associations, which some of them would do well to emulate.

We earnestly tender to the Illinois State Veterinary Medical Association our best wishes for its prosperity, and hope that its annual and other meetings may always be attended with a degree of interest and profit in future at least equal to that with which that of the present year has been characterized.

SURDITY IN HORSES.—We received, some time since, an inquiry from one of our readers, which, although we were unable to answer satisfactorily for him, yet relates to a subject of more or less interest to the profession generally. It referred to the fact that a bay horse, which for years had always readily obeyed the voice of his driver, became entirely deaf in consequence of the shooting of a rat in the stable, and from that day became perfectly oblivious to any word of command, whether in the stable or while at work. "What can I do for him?" asks our correspondent. Affections of the ear are not common in the larger animals, and causes of surdity are very difficult to make out. In reference to the present case, while we may somewhat incline to attribute the trouble to a sudden rupture of the membrane tympani, yet we are constrained to say that our diagnosis is very uncertain, and that our prognosis is serious. The case is interesting *per se*, and we would be glad to hear what has been the result of the treatment to which the patient had been submitted.

THE SUBSCRIPTION PRICE OF THE REVIEW.—If we had ever feared for the result of our "error" in reducing the subscription rate of the REVIEW as we did, and that our new departure was destined to prove to be a mistake, we should certainly by this time have discovered the fact. We are pleased, however, to be able to state that such is not the case; that we have received many letters approving the change, and that our list of friends has considerably increased. For some, the REVIEW at $4.00 was cheap enough, and a reduction suggested the idea of the lowering of the value of our publication. But the majority saw that the step was wisely taken, and that mainly, the new subscription rate meant that the REVIEW was to be placed within everybody's reach. It was not without careful consideration that we decided on the reduction, and when we did so, it was because the REVIEW could afford it; because it was not a money-making undertaking, and because we thought a wider circulation would benefit the journal itself, contribute to the elevation of the profession, and be useful to practitioners. We have, however, recently received a letter asking for information in relation to our price for clubs, which seems to indicate that even at $3.00, there are persons for whom the REVIEW is still too expensive. Our experience with club-forming and club-rates has been unsatisfactory, and on that account we have decided to ignore the club system in publishing the Review. We cannot help thinking that either the publication is good and is worth what we ask for it, or that it is so poor that any thing like the regular price is too much for it.

The Review is the only strictly veterinary journal published in the United States, and we endeavor to the utmost limit of our ability to entitle it to the approval and support of our friends, and if its subscription price is ever to be reduced again, it will be for reasons similar to those by which we have been influenced in our recent change, and not for the sake of trying to secure a few more subscribers. We do not wish to be understood as saying that our subscription list is large enough, and that we do not care to see it increased. Far from it; we thank our present friends for their support, and we hope for that of many more in the future, to enable us to make the Review still cheaper, and we feel more or less confident that our hope is destined, at no remote period, to be realized.

ORIGINAL ARTICLES.

THERAPEUTIC REVIEW OF MILK FEVER, OR PARTURIENT APOPLEXIA.

By John Faust, V.S.

(*Written specially for the American Veterinary Review.*)

The following lamentable therapeutic induced me to write the appended article, hoping that my entirely different treatment may benefit some of the readers of the Review, and that the result will be to the advantage of those who follow it. I will cite the following authors:

Mr. Cartwright, of Whitechurch, Shropshire, says in the Third Vol. of "*The Veterinarian*," page 451: "Although I have seen at least a hundred cases, chiefly in this town, during the last twenty-five years, yet I am almost ashamed to confess that I cannot recall to recollection that I have ever cured a single case; nor have I ever heard of a case being cured by any of the quacks in the neighborhood."

Mr. Wardle, of East Sheen, says in the abstract of the Proceedings of the Veterinary Medical Association for 1841, page 155: "Unfortunately the majority of cases that have come under my notice have proved fatal."

Mr. Mayer, Jr., of New Castle-under-Lyne, says at page 160 of the same volume: "It is very fatal and, in some districts, considered so incurable that the animal when taken is generally destroyed."

Mr. Simonds, Professor at the London Veterinary College, says in the same volume, page 160: "It seemed to be the very acme of all the ills with which the lower animals are affected; bidding defiance to all varieties of treatment adopted, and terminating almost always in death."

Woodroffe Hill, in "Bovine Medicine and Surgery," says: "In the earliest part, bleeding; next, epsom salts, aloes, jalap, cream of tartar, nitrate of potash and camphor, all in mass; or croton oil and linseed oil; large and repeated doses of alcohol."

Keeping the head cool is also an important matter.

In tympanitis, use trochar.

When delirious use hypodermic injections of morphine and Fleming's tincture of aconite in fifteen-minim doses.

The same author mentions an instance of a member of the profession being called to attend a cow in the very early stage of the malady, before she got down, and he at once exclaimed: "Oh, it is a case of milk fever; she will die." And die she did, for very little he troubled further about her. And it is doubtless through nonsense that the disease is so regarded.

Fleming, in "Veterinary Obstetrics," says: "The different modes of treatment enumerated for the cure of this disease are completely bewildering; and they are so diametrically opposed to each other—from the obscurity which prevails as to the nature of the malady, we suppose—that we can scarcely be astonished to find that they are all more or less unsuccessful."

"Frank, in "Handbuch der Theirarztsichen Geburtzhuelfe," recommends sulphuric ether, camphor and asafœtida in the first stages, and croton oil, strychnine, tartar emetic in large doses in later stages. Digitalis, secale cornutum and the different salts, aloes, oil of turpentine, arnica flowers, nux vomica, cinchona, bryonix alba, powdered ipecac and many others.

Prognosis unfavorable.

Zipperlen, in his work, recommends camomilla infusions, application of cold bran bags over the loins every ten minutes, sabina and similar remedies recommended by former mentioned authors.

Friedberger and Frochner, in "Pathology and Therapeutics," recommend physostigma, warm and cold applications, shower baths on ear, ironing spine over a woolen cloth with hot flat-irons, electricity, chloral hydrate, inhalations of chloroform and many others.

Our periodicals have given us nothing more definite than our previous literature, although the idea was entertained that eserine and pilocarpin were the hope of some of the profession, but we have received very unfavorable results.

The following is the method adopted by me for twenty years, with better results than any of the before-mentioned authors.

First, keep animal in natural position with straw props; next remove urine by catheter. Then give tincture of aconitum napellum and tincture of belladonna, alternately, every fifteen minutes —thirty-drop doses.

The first indication of recovery is returning consciousness, the next a very hard black fœces and a small quantity of coagulated mucus.

As soon as improvement manifests itself, reduce the dose to one-half, and give dose every hour. If paralysis remains give tincture nux vomica every two hours—thirty-drop doses.

I have every reason to believe that if the aconite and belladonna were given in the early stages of the malady, we would have scarcely any deaths to report.

The tinctures used by me are pressed out of the fresh plant. I have used the fluid extracts and other tinctures with no uniform success.

RATTLEWEED OR LOCO-DISEASE.

By Dr. J. P. Klenoh, V.S.

I have lately noticed in the American Veterinary Review of New York, a few notices that I consider to be of great interest to veterinary science, because they describe the effect of the rattleweed plant on horses and cattle in the large pastures of Nebraska, Kansas, Texas and the Territories, and call it Rattleweed, or Loco-disease or Crotalism, a disease that has not been described as such by any veterinarian authority in Europe or on this Continent.

I had the good fortune of observing that disease near Modesto, where I could make daily visits to my patients; and I am glad to be able to communicate to the members of this Association my little experience about this singular disease.

In September, 1887, a farmer called on me and asked my advise for his rattleweeded horses. As I had never seen such patients before, I concluded to drive to this man's ranch, where I found several horses showing great excitement; they could not be approached, so a close examination was impossible. I prescribed one drachm of bromide of potassium for each one every evening in the feed and two weeks later the horses were all right and good to work. Upon this happy result, I thought I had a sure cure for rattleweed, and if that proved to be correct, I was a made man. But there is many a slip between the cup and the lip, and my hopes for wealth turned out to be very rattleweeded indeed. That was the first and last cure I ever effected. Nevertheless, I intended to follow up that disease and found a good opportunity at the next ranch, where all the mules and horses were affected. So I drove up to this man's place and offered to cure his animals for ten dollars apiece, no cure, no pay. "All right," said the man, "there is a mule that came near killing me this morning. I had to knock her down with a fence rail and tied that heavy chain, twenty feet long, on a fore-leg, to keep her from jumping at me." I kept at a fair distance from that mule, but there was a family horse, very quiet, that I accepted for studying upon.

Symptoms.—They vary greatly in intensity, according to the temper of the animals and the quantity of the plant taken. The eyes are staring, sunken, glassy, pupil dilated, but able to contract when exposed to sudden light; horse cannot calculate distance, nor dimensions, nor nature of objects. When seeing a small object such as a bar or a rope, lying in his way, he will leap over it as if it were four feet high; a barn near at hand seems to be far off, and one at distance, near-by. He will go headlong against a barn, a rock or any obstacle as if he were totally blind; he will let me get close to him, then suddenly run away and suddenly stop, stare and look like a mad horse. He cannot see the manger with feed, although knowing its usual place; membranes of eyes injected and infiltrated. He walks with difficulty, shows a feeble and uncertain gait; lifts the legs up like a blind horse, will not back under any circumstances, wants to go in the opposite direction to which I pull him; cannot turn him around; when the rope pulls on the neck very hard, he grunts; seems to like the rubbing of the temporo-auricular muscles, and throws the head excitedly sideways when I pinch the base of the ears or behind and over the occipital bone. Cannot hear, seems deaf. The horse eats and drinks, but slowly, and at times stops masticating while the mouth is full of feed and some hay hanging partially outside—what the French call smoking his pipe—in sleepy staggers or immobility; seems to have no taste, as I have seen this horse and mule eat grain lively for three or four nights while two ounces of pulv. barbad. aloes were mixed with it; they never knew the difference. They are generally very excitable; if a quick motion is made before the animal, such as throwing up the arms, chicken flying over the fence, slapping of doors, etc., they are greatly frightened, and tremble all over, especially in muscles of head, neck and fore-legs. Sometimes a horse, and more so a mule, is suddenly seized as with mania, in which he gets very excited and quite uncontrollable and even dangerous. I have seen the son of the house, standing three yards away from this old gentle family horse, stretch his hand towards the horse's face, and hardly did he notice the hand in that position but the horse lay his ears, stretched out his head and neck, opened his mouth and made a sudden plunge towards the boy, who had to run for his life; one moment later he approached him from the side without danger. This would indicate a hallucination. When left alone the animals will stand quiet, stupid, with head down, half asleep, like comatous, and might be standing thus much of the time for a whole week, with head often resting against some object. The head might be drawn towards the breast or stretched out.

The appetite diminishes with the progress of the disease. Although tolerably good yet in the period of over excitement, still the animals will lose flesh gradually and become poorer as the disease advances, so that when the coma sets in, they will stop eating altogether, and become entirely emaciated and die at last from sheer exhaustion and cachexia.

The artery is very small, depressed, indicating a very poor flow of blood; pulse so feeble that it cannot be taken; pulsation of heart also very weak, cannot be counted with the hand, but on auscultation I was able to count thirty-eight pulsations; respiration five, vesicular murmur in lungs inaudible, pulse various, visible at distance.

Causes.—There is no doubt but that this disease is caused by the loco-plant or rattleweed. Prof. Sayre of the Kansas State University, Department of Pharmacy, gives a full description of the plant and says that the crazy-weed means only two plants, the Astragalus Mollissimus and Oxytropis Lamberti, both belonging to the natural order of Leguminosæ. They grow on high grounds or rather dry soil which is also gravelly and sandy; they can be found also in the valleys, especially on uncultivated land, alongside the public roads and railroads. Every few years they make their appearance again on cultivated lands, when they are cut with the crop, thrashed and mixed with grain and straw. That explains how this disease is absent for a few years and then again becomes very violent, as I have remarked it around Modesto and the whole San Joaquin Valley. But in large pastures that are never plowed up, and where the plants are growing year in, year out, the stock is liable to eat it in the summer when feed is short. They bloom about June and bear a bright colored flower, yellow or bluish purple color, one foot and a half to two feet high, developing large pots, resembling the pea, but containing a number of black or yellow hard seeds. Prof. Sayre has made several chemical analyses of the dried plant, and the result gave him fat chlorophyl and soft resin. No traces of any alcoloid were detected.

In order to ascertain the effect of this plant upon the animals, Dr. Harding, Veterinary Surgeon in Dodge City, Kansas, made the following experiments with loco-plant. One experiment was made in the pasture with two horses, both having fed on loco. One of these horses found a good deal of rattleweed in his field, while the other one had none, because the plant had been carefully removed. The first horse died in the pasture; the second one recovered. For the second experiment he placed two horses similarly affected in the barn. One received dried loco feed, the other one was fed on clean hay. That one died; the last one recovered.

In the November edition of AMERICAN VETERINARY REVIEW, 1884, Prof. Stalker, of the Veterinary College at Ames, Iowa, published a very interesting article about this disease. He says that the symptoms in some cases bore such a resemblance to those produced by eating Astragallus Mollissimus or loco-plant of the Western plains, as to direct his investigations to that family of plants. But on careful examination of the meadows and pastures, he could not discover a single loco-plant. However, he succeeded in finding a closely related plant called, Crotalaria Sagettalis, or Rattlebox, also known as the wild pea. In order to test the effects of this plant, he prepared a strong infusion from about ten pounds of the plant and administered it by means of a stomach pump. In twenty minutes, stupor began to appear and all the symptoms were closely defined. At the end of six hours, the stupor disappeared and in another hour the horse began to eat. The following day, when he had apparently recovered from these effects, he was given half the quantity of the drug as on the previous day. Now the symptoms were developed much quicker and death arrived in one and one-half hour. The post mortem examination revealed the characters of the above described disease. He now resolved to make a second experiment upon another horse and procured a bushel of the pods of that plant, and gave daily an infusion obtained from about one quart of the pods. On the fifth day of the experiment the characteristic stupor came on and grew more marked until the thirteenth day, when the animal died. The post mortem examination gave again the regular result. Prof. Stalker, now State Veterinarian in Iowa, calls this disease crotalism, from the name of the plant, Crotalaria Sagettalis, which belonging closely to the same family and species of plants, will make no difference as to the real cause of the rattleweed disease, and this is proven to satisfaction by the above experiments.

Let us pass now to the pathological lesions after death. As I never had any opportunity to make a post mortem examination of the disease myself, I cannot give any opinion as to the nature of these lesions, but I refer to the results published in the REVIEW by two competent veterinary surgeons. Prof. Stalker made the after-death examination of five subjects with the most perfect uniformity as to the lesions presented. In every instance there was a marked infusion into the fourth ventricle of the cerebrum; liver and spleen were abnormally dense, the walls of the intestines almost destitute of blood and the stomach enormously distended with undigested food; the stomach with its contents weighed as much as seventy-five pounds.

In the July number, 1888, of the REVIEW, Dr. Schwartzkopf, Veterinarian in the United States Army in Western Texas, states that he found the large sinuses of the cerebrum to be filled with straw-colored fluid; the vessels of the pia-mater injected; the gray brain substance reddened and œdamatous, and the cut surface glistening and moist. On the basis of the brain, inside the arachnoidæ, about one teaspoonful of pinkish fluid; the medulla oblongata and parts of the spinal cord taken from cervical and lumbar regions œdematous in appearance and moist in cut surface; thoracic cavity normal; heart endocarditic in a slight degree, stomach partially filled with ingesta; abdominal organs all normal.

Physiological Remarks Concerning the Nature of the Disease.—According to these lesions, which I consider to be very clear and distinct, we can with all certainty locate the disease in the nervous centres, the cerebrum and the spinal marrow. All disorders in the digestive organs, in the circulation and in the general nutrition are consecutive and entirely depending from the pathological alterations in the nervous system. The œdematous exudation in the spinal marrow and the cerebral substance would explain the difficulties in the movements of the body, in progressing, turning, backing, in the uncertainty of the gait and the painful sensation over and near the atloid-occipital articulations, etc., as if the least movement of any part of the vertebral column would seem to cause a painful pressure upon the spinal marrow and its membranes. The coagulum in the fourth ventricle is probably causing a pressure upon the superior half of the medulla oblongata and might be the cause of the irritation of the roots of all the nerves emanating from that point, such as the seventh, eighth, ninth, tenth, eleventh and twelfth pairs, and above all the fifth pair, which furnish the vital nerves to all the principal organs that enable the animal to correspond with the outside objects, and to maintain life and general health in an efficient condition. Thus we can easily account for the perversion of sight as to distance, size and nature of objects, the weakness of facial muscles, the loss of taste and hearing, the diminished action of heart and lungs and the directly following decline of general nutrition or general weakness.

But effusion of blood in the ventricles and subarachnoid cavity can be found in other diseases of horses as well as in rattleweed, such as sleepy staggers or immobility and encephalitis. Truly they will produce different effects according to their degree, and can be expressed by convulsions and various degrees of violence and frenzy, stupor, coma or paralysis. But as yet no disease of the brains or their envelopes have developed the various symptoms of irritability, in so many different degrees, as the loco-affection. If the coagulum in the ventricles and the œdematous exudation in the substances of the cerebrum and the spinal marrow are not the direct cause of this disease, they might be the effect of an irritating element that produces congestion in the same organ. What is then this irritating element? What is its nature? Is it a narcotic like opium?

Prof. Sayre has proven by repeated analysis the complete absence of any kind of alcaloid in the loco-plant, and gives us no indication as to the true essence of the irritating element. There must be an unknown agent that causes some irritation of the nervous system when taken in small quantity, and if it enters the body in larger doses or for a long time, it will cause at the end congestion or mere stagnation, and consequently the various pathological lesions as have been found after death. The true nature of this irritating agent remains unknown until more complete analyses have been made of the plant, and until the disease has been more thoroughly studied in its different stages, before and after death, by learned professionals who can dispose of more time and more money than any regular practician can afford to spend on such patients.

Treatment.—It is difficult, if not impossible to prescribe a positive treatment for this disease. For animals affected in large pastures, the only good advice to give, is to remove the stock to another pasture, clean off the plant and plow up carefully all such land where the rattleweed plant grows. Even the working horses on a ranch are very difficult to treat, as it is generally impossible, if not dangerous, to approach and handle them. Such horses as are only lightly affected or only over-excited, might be kept moving or working, must be fed on clean hay, or green feed, and might receive a dose of bromide of potassium in the feed every evening. Belladonna might answer as well. If it be possible to administer a good dose of alœs, and at the same time take out three or four quarts of blood, it might have a good effect. It is practically not advisable to apply a blister behind the ears. In the course of five or six months a good many animals, thus cared for, especially when in a good green pasture, become more quiet and again able to work.

When coma is present, the case is hopeless; general weakness and emaciation will progress and cause death, especially if the horse is left to himself in the pasture.

Before closing this notice, I wish to call attention to the precautionary advice given by the German, French, and Belgian authors in the use of Leguminosæ in general, which advice is very proper in Europe, where a good deal of artificial hay is made every year for cattle and horses. All leguminous plants contain a great proportion of nitrogenous substance that is very rich and nourishing, and disposes the system to the formation of adipose tissue. But they are also said to contain a specific poison, that causes immobility, a subacute inflammation of the brain, or other nervous affections, like restlessness, paralysis, roaring, sleepiness and even congestions. Ordinarily will often occasion nervous disorders, when given in large quantities. Of these dangerous leguminosæ, two species are particularly mentioned: they are hop-clover—Medicus lupinus and Lathyrus Cicera—chick vetch. Very similar symptoms may be caused by English Ray-grass. Dr. Winkler advises to use carbonic acid, bicarbonate of soda and tartaric acid.

It might be possible that this irritating element in the rattle-weed plant has some similarity to the specific poison in all the leguminous plants.

MALADIE DU COIT.

By W. L. Williams, V.S.

Report on the outbreak in Illinois to the State Board of Live Stock Commissioners.

(*Continued from page* 349.)

PATHOLOGICAL ANATOMY.

In animals which have succumbed to, or been destroyed in the last stages of the malady, there is seen quite uniformly an evident degree of anæmia and emaciation. Distributed throughout nearly every tissue in the body there is found a characteristic yellowish deposit of gummatous materials, bearing a close resemblance to the gummata of human syphilis, especially abundant in the subcutaneous and intermuscular connective tissue, and nearly every organ of the body partakes of the general yellowish tinge.

The muscles, especially those of the thigh and croup, are pale and soft, sometimes showing marks of fatty degeneration.

The bone tissue is fragile, and both cancellated tissue and medulla show large brown patches.

In each autopsy made the coxo-femoral articulations (hip joints) were found much altered, their ligaments enlarged, softened and congested. Other observers state that in some cases these ligaments become so fragile from disease that they are sometimes ruptured.

The synovial capsules of the hip joint were found filled with reddish-colored synovia, and the membrane injected and dark colored, and in several cases in the acetabulum was found a well-marked dark purple spot, surrounding the attachment of the round ligament of the hip joint (ligamentum teres.)

The bowels were found pale, and in some cases showing signs of previous inflammation on their peritoneal surface. The mesentery presented a pale saffron color and increased thickness, due to a gummatous deposit.

The mesenteric lymphatics were uniformly enlarged, pale yellow and friable.

The spleen was pale, small, shrivelled, tough and hard.

The liver was soft and filled with dark blood.

The kidneys were found somewhat enlarged, very pale, and containing considerable watery fluid.

The genital organs fail to exhibit the extraordinary changes one would naturally expect to find. In a well marked case in a mare, affected one year, where the vaginal discharge persisted to time of slaughter, the autopsy revealed the uterus and vagina containing a considerable amount of a dirty grayish-yellow purulent matter, the uterus enlarged to thrice its natural size, and its lining membrane and that of the vagina, pale yellowish white, thickened and wrinkled. The left ovary contained a cyst, filled with one ounce of yellowish serum.

Stallions. Autopsies on several stallions, all diseased from one and one-half to over two years, exhibited the general changes as previously indicated, while in some cases the genitals showed marked changes, and in others there were very slight deviations only from the natural state. One very bad case, Black Brilliant (XIII), had scrotum enlarged to about ten times its natural size, hard and unyielding to the touch. The skin of the scrotum was enormously thickened and of a pale yellow color. The inguinal gland of the right side was the seat of an extensive abscess, opening at the upper part of the scrotum. A large abscess, occupying the usual position of the testicle, filled with dark yellow, hard cheesy pus, pushed the testicle from its place up into the inguinal ring. The testicle was small, atrophied, soft, flabby and pale yellow, with the membranes firmly adherent at every part.

Penis offered no external evidence of disease.

Urethra contained a small amount of a dirty puriform matter, the living membrane appearing roughish, grayish-yellow in color, without any appearance of ulcers.

The seminal vesicles and enlarged portions of vasa deferentia contained a considerable amount of thin, grayish, puriform matter.

The left testicle was about natural in size, with coverings firmly adherent to every part. No appearance of ulcers was found in the urethra of either of several stallions examined, but all seemed to offer, in a greater or less degree, a collection of unnatural puriform material in the vesiculæ seminæ and vasa deferentia, from which, so far as could be seen, the infecting material had been derived.

The testicles were uniformly pale yellow, soft and flabby, and almost invariably smaller than natural.

In some cases the coverings of the testicle (tunica vaginalis propia and tunica albuginea) were thickened, adding to the gross size of the testicle and giving it a somewhat firmer feel than where this thickening was absent. The two peritoneal coverings were more or less completely adherent to each other. Tha condition of the sheath and scrotum varied widely from the normal size to the great enlargement in the cases noted above.

Other observers have noticed inconstant changes in the nervous system, principally of injection of the coverings of the brain and spinal cord, softening of the lower part of the cord and occasional extravasation of fluid into the ventricles of the brain.

The nasal mucous membrane usually shows catarrhal inflammation, with collections of pus or mucus in the nasal cavities.

Metastic abscesses may occur in the testicles, spermatic cord, lungs, and other organs.

Diagnosis. Of all contagious diseases, none probably are so insidious and difficult of positive diagnosis as equine syphilis in imperfectly developed, isolated cases, without a clear history, and since we now have the disease in our midst, a reliable means of diagnosis is certainly a desideratum.

To this end, we should first decide whether or not there is a benign and a malignant form of this disease.

All English writers mention two forms, relying for their descriptions upon translations from the French and German.

Judging from these translations it would appear that those authorities differ among themselves as to the existence of two forms of the disease, English writers, rather ineffectually, attempting to harmonize certain radical differences in symptoms by bringing to their aid climatic influences or different sources of origin.

Evidently in some of these translations two distinct disorders are confounded, and Rodloff is undoubtedly correct in the main, when he asserts that the so-called benignant form of equine syphilis is a wholly distinct benign affection.

In attempting to follow the writings in a foreign tongue, that very able and careful author, Dr. Fleming, is led into some remarkable contradictions and perplexities. In describing his benignant form, which he asserts corresponds to the first stages of the malignant, he makes particular mention of abundant pustular eruptions on the external genital organs, and later, in describing the malignant form, admits that in many of the most serious outbreaks these eruptions were absent, and yet these cases must pass through the primary stages like the benign.

We understand that a benign disease is one of a mild character not dangerous to life, while a malignant disease is one which jeopardizes the life of the afflicted being.

Now Fleming, discussing the nature of the disease, says: "And we must be content with the statement that it is an eminently virulent malady." Again, under the head of course and termination, he says: "As a rule the progress of the disease is slow and its termination most frequently fatal."

Again, still under the head of "Mortality and Loss," after quoting serious losses in several outbreaks, he says, "but it may be sufficient to state that the loss is variable, though always very serious, and is seldom less than fifty per cent., rising even to seventy," a remarkably severe loss for a disease frequently benign.

In no outbreaks is there a loss of less than forty to fifty per cent. mentioned, whereas if there be a benignant and a malignant form, the one passing into the other by imperceptible gradation, we should expect a like gradation of losses, instead of nothing in the benign and fifty to seventy per cent. in the malignant.

Quoting a Bohemian writer, Fleming makes the incubative stage from eight to sixty days; while citing Haubner, writing of the benign form, he makes the time three to six days, thus apparently sanctioning the idea that a benign attack of a disease develops far more quickly after infection than a malignant one, although this benignant form is essentially the same as the first stage of the malignant.

Again, under the head of *Exanthema of the Genital Organs*, Fleming describes a distinct exanthematous disease, without making any marked distinction between it and his benignant type of maladie du coit, and mentions, as synonyms, names taken from his "Synonyms of Maladie du Coit."

Professors Williams and Law follow briefly the description of Fleming, emphasizing the pustular eruptions on the external genitals, as described by Fleming in his *exanthematous* affection, and in his benign maladie du coit, and both are silent regarding the wholly distinct benign exanthematous disease, which is far more widespread and common than maladie du coit, is characterized by abundant pustular or vesicular eruptions upon the external genitals, which appear in successive crops, heal rapidly, and disappear spontaneously, or readily yield to simple local treatment in three to ten weeks, and rarely, if ever, ending fatally.

This disease has been fully described in my report of an outbreak at Kempton, Ill., which I investigated by your orders in October last, and which is undoubtedly the disease which most authors confound with the malignant disease under consideration.

While investigating the outbreak in De Witt County, I had occasion to see a young roadster stallion, property of B. F. Nickerson, of Heyworth, Ill., which was affected with abundant vesicular eruptions on the genitals, appearing in successive crops, healing rapidly, and leaving a temporary white cicatrix at the seat of the eruptions.

This horse being at the immediate border of the infected area, and relying upon the description of English writers, it was very naturally supposed that this horse had been exposed to and contracted the disease, but careful investigation showed that he had not been exposed, that all mares served by him remained sound, and in a few weeks time the horse had completely recovered, and was unquestionably affected with the same benign venereal disease as that observed at Kempton.

There has been nothing about the present outbreak to suggest benignancy, as over fifty per cent. have already succumbed; a number were so worthless that they were bought at your orders, for a nominal price, and killed. And the few that remain have not passed through the malady without jeopardy to their lives, and in many cases, their peril is not yet passed. Taking all facts into consideration, therefore, it seems quite reasonable to disagree with most writers and agree with Rodloff, that the so-called benign and malignant types of maladie du coit are really two wholly distinct affections, and admitting the existence of a malignant form only, which we choose to denominate equine syphilis, and a wholly distinct benign venereal disease, we are better prepared to arrive at a safe diagnosis.

The pathognomic signs in the mare consist then in the appearance, in eight to many days after coitus with an affected stallion, of well marked uterine and vaginal irritation, with redness of the vaginal mucous membrane, and mucous becoming a muco-purulent discharge from the vagina, swelling of the lips of the vulva, enlargement, loss of pigment and unnatural dryness of the clitoris, and loss of pigment along the margin of the vulva, and on the thin skin of the vulva, anus, perinæum, under side of tail, etc.

This depigmentation is peculiar and characteristic, presenting a marked distinction between the two venereal diseases.

In equine syphilis these white spots are *not* the result of preexistent ulcers or erosions, but the depigmentation takes place without any other changes in the skin, observable to the naked eye; while in the exanthematous disease the discolored spots are the results of previous eruptions, and are no larger than the parent ulcer ($\frac{1}{8}$ to $\frac{1}{4}$ inch in diameter) and regular, circular in outline, the pigment being most completely destroyed at the center and being replaced by pigment first at the periphery; while in equine syphilis these white patches are indefinite in extent and contour. They may be one-quarter to one, or even four or five inches in diameter, or the different patches may extend and coalesce, until the whole perinæl region is devoid of pigment, and when the pigment is replaced it is deposited hap-hazard over the entire discolored skin. The discolored spots in the benign exanthem are very transient, disappearing in ten to fifteen days, while those of equine syphilis persist for six to eighteen months and even longer, disappearing first at parts farthest from the vulva, then the margins of the vulva lips, and lastly the clitoris.

The open vulva and enlarged, protruding, unnaturally dry clitoris, especially in young and otherwise healthy mares, is quite pathognomonic. The welt-like, lenticular swellings in the skin of various parts of the body, the rapidly progressing emaciation without loss of appetite, the erratic and peculiar lameness and paralytic symptoms already described should, when present, suffice with the above to enable us to form a safe diagnosis.

In the stallion the history of the case, whether exposed or not, or whether infecting mares or not, is all-important, otherwise the diagnosis is generally difficult and sometimes impossible. The constitutional symptoms, when present, are as characteristic in the stallion as in the mare, but the former may be long affected before developing these.

There is usually, however, some abnormality of the external genitals, either of the prepuce, sheath, testes, penis or scrotum.

The prepuce, when affected in the earlier stages, presents a peculiar œdematous looking swelling of variable degree, but it is unlike ordinary œdema, the infiltration being more fixed and elastic than in true œdema and not pitting distinctly on pressure; neither is it hard and indurated, but is yielding, painless and elastic.

The penis when affected offers specially its pendant character;

it hangs too far out of the sheath, generally in the prepuce, but in extreme cases hangs entirely out of prepuce and sheath, full length and powerless, so that when the animal is trotted the penis is thrown from flank to flank by the swinging of the body.

When the testes are affected they may be atrophied, and high up against the inguinal ring, or apparently enlarged and pendant, are usually soft to the touch, and indefinite in contour from adhesion of the coverings.

The prognosis is always unfavorable, and there is no safe guide by which we can predict the final result.

The mortality ranges usually between sixty and eighty per cent. of the affected animals. In the present outbreak, as shown by footings of the stallion list, almost seventy per cent. have died or been killed, at a nominal price, as practically worthless; and when we consider the imperfect recoveries in those remaining, the exceedingly protracted course of the disease, the expense of keeping while affected, and expense and trouble of treatment, the direct monetary loss to the owners has considerably exceeded the original value of the entire number of affected animals.

Contagium is "fixed," that is, transmissible only by direct inoculation, and is thought by many authors to exist mainly or only in the secretions of the urethra in the horse, and the vagina and uterus in the mare.

Autopsies in several stallions in the present outbreak revealed no ulcerations or disease of urethra, but there was every reason to believe that the seminal vesicles and the enlarged portion of the vas deferens were the real sources of principal supply of the infecting virus in the stallion. Experiments by European veterinarians, as well as observations in the present outbreak, demonstrate fully that the disease is contagious, but it seems impossible to transmit the disease to others than solipeds (horse, ass and mule).

The vitality of the virus is unknown; in affected animals it certainly persists for several years.

It is transmitted practically only by direct contact of a diseased with a healthy animal in the act of coition, although it is possible to transmit the disease by inoculation.

Cohabitation without sexual intercourse will not produce the disease.

Its extension is affected by diseased stallions and mares, the insidious character of the malady in both being specially favorable to the transmission of the disease to remote localities, where it may gain a serious hold and wide dissemination before its dangerous character is ascertained.

(*To be continued.*)

THE VETERINARY SURGEON IN THE U. S. ARMY.

By Fearnaught.

As very few, if any, of the members of the veterinary profession outside the service itself have any clear ideas on the status of the veterinarian in the United States Army, and as I have seen the subject only touched on once or twice, I make this effort to place the matter in its true light before the readers of the Veterinary Review (confining myself strictly to facts) with a hope that it may be the means of deterring some young graduate from committing professional suicide, and at the same time increase the probabilities for the reform so much needed by the army veterinarian.

The veterinary surgeon who desires to enter the army of the United States in his professional capacity makes application by letter to the Honorable Secretary of War, at Washington, D. C., and if a vacancy exist, and it generally does exist, in any of the ten regiments of cavalry constituting the mounted branch of the service, the applicant, providing he be a graduate of any college, is appointed instanter. There are fourteen veterinary surgeons in the United States Army, and these are distributed among the ten regiments already mentioned, the Seventh, Eighth, Ninth and Tenth (the regiments are designated numerically) receiving two, while the others receive but one; this inconsistency on the part of Congress is one of the mysteries of the service. Should the applicant be appointed to any of the commands from First to Sixth, inclusive, he receives one hundred dollars per month and quarters—quarters mean house room, light and fuel—as compensation, but should he be appointed to any of the others, he receives but seventy-five dollars per month, it being understood that he enters as junior surgeon, the senior receiving one hundred dollars; the duties consist of visiting the stables, generally once a day, and treating any animal that may be brought to his notice as requiring his services, but this latter seldom happens for reasons that will soon be apparent. What rank does the veterinary surgeon in the United States army occupy? This is a very natural question. He occupies no rank virtually; the army regulations, the book by which all army people swear, says he shall hold the rank, and receive the pay and allowances of a Sergeant Major, but the veterinary surgeon being a civil employee cannot hold any rank, therefore it is only nominal. The next question in order is, what is a Sergeant Major? A Sergeant Majorship is the highest rank that any enlisted man can hold in the army of the United States, and this rank is only three removes from a private soldier. The Sergeant Major is selected and appointed by the commanding officer of the regiment, and he can be relieved and reduced at his will. It requires no especial training to fill the rank of Sergeant Major; all that is necessary is to read and write fairly well; he is simply a *soldier*, and this term has a very significant meaning when uttered by an officer, for remember an officer is not a soldier, he is an *officer*. The chasm between an officer and a *soldier* is a very wide and deep one indeed, and cannot be bridged under any circumstances, except by a commission signed by the President of the United States; and yet the army veterinarian is placed on the soldiers' side of the chasm, or suspended midway in a miraculous manner, like Mohammed's coffin. In this connection the unfortunate veterinary surgeon always reminds me of Darwin's "missing link." The wonder is that his caudal appendage has not blossomed forth ere this. Socially the army veterinary surgeon is not tolerated by the officers; they no more think of inviting the veterinary surgeon to dinner or any other social entertainment than they would of inviting the Sergeant Major or Mr. Crowley, (ere his death) in Central Park Zoological Gardens; he is referred to as the "horse doctor," probably by some little Second Lieutenant, who, having been dismissed from West Point because his cranium was too thick or his brain too small to retain any of the knowledge there imparted, crept into the army as an *officer*, either through some political influence brought to bear upon the White House, who appoints him from civil life, or he enlists in the army as a private, if his father is an officer, serves a certain period, and, after passing a bogus examination before a board of officers composed of friends of the family, lo, and behold, blooms forth as an officer—and looks down with lofty contempt on the miserable "horse doctor," who has spent from three to four years of his life, and from two to four thousand dollars in cash to acquire a scientific training that will place him in a position where he can earn from seventy-five to one hundred dollars per month, and herd with the common soldier who takes a pride in ridiculing his professional opinions, even to his very face. All men, even veternary surgeons, must have associates; it is human nature; and stationed at a military post, the veterinarian being tabooed from the society of the officers, seeks the Commissary Sergeant, who issues the rations to the trooper, and whose ideas and aspirations can never soar above beans and hard bread, or the Quartermaster Sergeant, who keeps tally of the pick-axes and shovels, and whose aim in life is to get ahead one pick-axe, and cheat the government mule out of his just due in the shape of forage. In this position, and with these associates, is it any wonder that the veterinary surgeon in the army is saluted by every drunken soldier he may meet, with the familiar abbreviation of "Hello, Doc," whereas the same soldier would no more think of saluting the M.D. in this manner than he would of committing suicide, and allow me to remark right here that the veterinary surgeon is not recognized either professionally or socially by the Post Surgeon; in fact he is not noticed at all. You may remark he can at least engage himself at his professional duties. Professional duties indeed! he has none; the troop farrier—over whom the veterinary surgeon has no more control than the president of the Lime Kiln Club has over the Interior Department—attends to that; if an animal becomes ill in the troop he is dosed by the farrier with—well, anything will do that comes handy, and if the animal recovers, well and good. If he is about to die the veterinary surgeon is sent for, and is then expected to perform a miracle; then comes the troop blacksmith—but let him pass, he is a monument erected to the ignorance of the War Department on all matters pertaining to veterinary science and especially to the treatment of the horse's foot in health; he is the butchering mutilator, who, armed with a knife and rasp, revels in the devastation he causes among that most important part of the equine's anatomy—his feet, and this individual lords it over the veterinarian in the army, for were he to interfere with the traditions of the troop shoeing-shop, or offer any suggestions without first requesting permission from the troop commander, he would be ordered out of said shop forthwith. The troops commander relies solely on the farrier and horse shoer, and treats the daily visits of the veterinary surgeon as a piece of impertinence. The drugs used in veterinary medicine in the United States army, thirty-one in number, are placed in the hands of the farriers, who keep them under lock and key, except the alcohol and ether, which he dispenses to his friends, and should the veterinary surgeon be called to treat an animal in a very urgent case, he has to hunt up the individual farrier to whose troop the animal belongs, in order that he may gain access to the drug that he requires. As you may observe, there is not much choice in the matter of drugs—turpentine, laudanum and aloes being considered all-sufficient by our friend the War Department.

The surgical instruments are in the custody of the quartermaster's sergeant, already referred to, who loans them out to the veterinary surgeons, who must return them the following day or an explanation is in order; these instruments are generally in a filthy condition and half rusted, and no sane man would for a moment entertain the idea of performing the simplest operation with them. The only alternative left is to use your own case if you can afford to purchase one out of your small salary. The Government furnishes nothing in the shape of a hospital in which to treat animals. Anyhow it would be a useless appendage, as the veterinary surgeon has not the power to place an animal on the sick list without the sanction of the troop commander, who may be some old fossil who knows no more about a horse than he does about manœuvering his company—and heaven knows, in the majority of cases, that is very little. When horses are about to be condemned for being unfit for service, a person would naturally suppose that in such a case surely the veterinary surgeon would be consulted. Not at all; he is never thought of. The first he knows of it is communicated by the farrier, or overhearing the conversation among the troopers. In the same manner when animals are purchased for remounts, the veterinary surgeon is totally ignored, and, as a consequence, the class of horses furnished our cavalry are a disgrace. The majority of them possess not a single point of a saddle-animal and are more fitted for the plow or garbage cart. For this reason, when on a comparatively short march, more than thirty per cent. of the horses in a command are suffering from sore back.

I will recite here a few of the indignities heaped upon the veterinary surgeon, who seems to be a shining mark for all who wish to shoot. One I have in mind was compelled to wear a soldier's uniform by the commanding officer and turn out on inspections with a sabre hanging from a belt, although he is a citizen. Recently, while on the march, the veterinary surgeon had his tent taken from him for the use of the two sons of an officer, because, forsooth, the officer found it too hot for three in his; the veterinary surgeon was not consulted at all, and the first he knew of it was on finding his tent had vanished. He made a respectful remonstrance to the officer in command, but was told to "shut up." He was forced to seek shelter with a hospital nurse while one of the officer's cooks occupied a tent that was never intended for him.

During a trip to the borders of Canada some years ago, on a surveying expedition, the cavalry command to which a certain veterinary surgeon was attached happened to meet with a mounted English command, accompanied by a veterinary surgeon, who, in a fraternal spirit, endeavored to call on his brother of the United States, but he, knowing, alas, too well, the relative positions of each, crept under his tent, sneaked around to the picket line, where he borrowed a horse and disappeared up a gulch, where he remained until the English command had taken their departure.

The veterinary surgeon is the footman, or "doughboy," as the troopers call an infantryman, of each cavalry regiment. He is not allowed a mount nor forage for one, and has to depend on the good nature of a troop commander for transportation, or else ride with a mule driver on the jockey-box of an army wagon. In this, again, he stands forth, the missing link between the cavalry and infantry arms of the service.

In was only a few months ago that the writer had the humiliation of standing by while an officer asked the veterinary surgeon (a very competent gentlemen) if he was properly treating a certain animal on the sick report, or if he understood his business.

The veterinary surgeon in the United States army is an hermaphrodite. He is neither a soldier nor a citizen. He is compelled to wear the uniform of a soldier if the commanding officer so wills it, or, if the officer in command cares not, he may dress in a gunny-sack suit if he chooses. * * * And, in the face of all this, there is a college I know of, situated not a thousand miles from the city of New York, who claims to have the exclusive privilege—save the mark!—of furnishing their graduates with positions! In the United States army, the graduate who has the misfortune to secure such a position has the sincere sympathy of the writer.

It will be remarked: Cannot this state of affairs be easily remedied? It certainly cannot so long as the members of the profession remain dormant and permit graduates to debase themselves by entering this service, where there is no veterinary organization whatever, no incentive to study, no practice (the farrier takes care of that), nothing to look forward to in the shape of promotion; the only object being to kill time and wait for to-morrow. Can the veterinary surgeon in the army be blamed for being dissatisfied? Can he be blamed for anathematizing the army each day of his existence? Can he be blamed for marking the day he entered the United States army with the significant emblem of a skull and crossed bones? It is the opinion of the writer he can not. But, you will say, can't he leave? He certainly can and does, which is why there is always a vacancy for some unsophisticated youngster. There are only two old men that I am aware of in the service, honorable gentlemen, who, though non-graduates, still fill the positions with credit, but then, they joined the army in the long ago as soldiers, and from stable guards to farriers have secured the appointment of veterinary surgeons. They understand the army, have been raised in it, and take all the indignities and insults as a matter of course. As I remarked before, the veterinary surgeon in the army cannot be blamed for bewailing his hard lot, but he can be blamed for his lack of energy in not letting his position be known to the public; he can be censured for not raising a single hand to help himself or his brother; he can be blamed for lying as a clog on the wheels of the veterinary profession in the United States, for permitting insults and sneers to be cast on one of the noblest professions in the land, that of ministering to the diseases of our animal friends.

To the shame of the veterinary profession—and particularly to the American members thereof—be it said, that not a single effort has been made to raise the profession above its present level in the United States army, if I may except that by Dr. Olaf Schwartzkopff, whose little pamphlet in reference to this subject does him great credit, and which should be closely studied by every veterinarian in this country. This pamphlet can be had by addressing him at Fort Meade, Dakota. Dr. Schwartzkopff is a German, only a short time in the United States, but he thoroughly understands the subject on which he writes, and it is by such agitation as his, seconded by the hearty co-operation of the veterinary profession throughout the United States, that anything can ever be accomplished for the army veterinarian. Young man, keep away from the United States army; shun it as you would the deadly upas or the fumes of carbon monoxide. There is a wide field for you outside its unhallowed precincts, where you can win fame and wealth without the indignities and insults, not to mention the $75 per month, that are yours in the army of the United States.

SNAKE BITE AND ITS ANTIDOTE.—V.

EXPERIMENTS WITH CROTALUS VENOM AND REPUTED ANTIDOTES, WITH NOTES ON THE SALIVA OF HELODERMA ("GILA MONSTER.")

By H. C. Yarrow, M.D., Curator Dept. Reptiles, U. S. National Museum.

(*From Forest and Stream.*)

(*Continued from page* 366.)

A great number of different plans of treatment have been suggested to the writer, and many substances have been sent to the National Museum to be experimented with, but in view of the fact that most of the latter were substances of which the proposer would not reveal the identity, no attention was paid to such except in one instance, that of a "mad stone," or "snake stone," so-called, the composition of which is reported upon by George P. Merrill, Curator of Lithology and Physical Geology, United States National Museum. This was sent by Donald MacRae, from Wilmington, N. C., and is "an indurated and impure kaolin apparently. Its virtue as a mad stone, doubtless, is due wholly to its high absorptive power, which would cause it to adhere to the wound for a time, or until saturated." This is presumably the substance which in the United States has so great a reputation among the common people, when used in cases of snake bite or mad dog bite; but it is quite a different thing from what is known as the snake stone in India, which is generally found to be, on examination, nothing but a piece of calcined deer horn.

A very interesting account of it is given by Dr. Alfred Eteson, Surgeon-Major, Sappers and Miners, Roorkee, in the *Indian Medical Gazette*, Calcutta, 1876, X., 309. He speaks of having received such a stone from a Catholic priest in British Burmah, which was simply a flat piece of calcined horn, three-quarters of an inch square and one and a half lines thick, and resembled a flint, except that all the edges were square and it was very smooth, with an even grade of close cancellations clearly visible. This stone was one of a number made by another priest for the use of the mission fathers. Dr. Eteson had occasion to use this stone a short time after in a case of snake bite, and states as follows: "* * * I pressed down the stone over the punctures; it adhered at once. I removed my fingers, then sloped his hand and turned it round; lastly I drew on the stone with moderate force until it lifted the skin, as a sucker would do. In about a quarter of an hour the patient himself first mentioned that the stone was loosed. I touched it with one finger and it became displaced." The man recovered.

Dr. Eteson states with regard to his case: "It is not worth much, for the identity of the snake and the precise conditions of the bite were not established, but at all events the stone did what it was professed it would do, and there was no suspicion of the man having been otherwise than genuinely bitten. When this particular stone was shown to the Indian snake charmers they appeared greatly surprised at its form, their own being small, rounded and pebble-shaped, but they recognized it as genuine." Dr. Eteson, being determined to investigate the matter still further, corresponded with the priest at Bassein who manufactured the snake stones, and received the following directions for making them: "Cut or saw in the shape of a gun flint the hard part of a good deer's horn. Polish these pieces by rubbing them on a stone. Soak them for eight hours in good vinegar. Take a small earthern pot (chatty) and place the bits of horn in the center, surrounded by rice hulls in such a way that the stones shall not touch each other. Fill the pot with rice hulls and seal its cover hermetically with earth. Put the pot in the center of a little fire made with rice hulls and let it remain for twelve hours. After the cooking, place the stones again in the vinegar for seven hours. Take out the stones and test them on the lips; if they stick like a cupping glass they are good. To preserve them they should be wrapped in cotton and kept from the air. After one has been used it should be soaked in milk, which will remove the venom." The priest stated that out of sixty stones thus prepared only six were found to be of service.

Sir Joseph Tennant, in his work on Ceylon, fifth edition, 1860, I., p. 197, speaks of the Pamboo Kaloo, a snake stone, which he saw applied by Indian snake charmers in two cases with apparent good effect. Those he saw were of the size of a small almond, intensely black and highly polished, though of an extremely light substance. Dr. Davy, on the authority of Sir Alexander Johnson, says the manufacture of these stones is a lucrative business, and is carried on by the monks of Manilla, who supply the Indian merchants with them, and his analysis confirms that of Mr. Faraday, who declared the stone to be calcined horn.

In Mexico a similar stone was used, which was prepared as follows: Take a piece of hartshorn of any convenient size and shape; cover it well round with grass or hay and inclosing both in a thin piece of sheet copper, well wrapped round them, place the whole parcel in a charcoal fire until the bone is sufficiently charred. When cold remove the calcined horn from its envelope, when it will be ready for immediate use. In this state it will resemble a solid black fibrous substance of the same shape and size as before it was subjected to this treatment. 1. "Use—The wound being slightly punctured, apply the bone to the opening, to which it will adhere firmly for the space of ten minutes, and when it falls it should be received into a basin of water. It should then be dried in a cloth and again applied to the wound. But it will not adhere longer than about one minute. In like manner it may be applied a third time, but it will fall almost immediately, and nothing will cause it to adhere any more." It will be noticed that the Mexican method of preparing the stones does not differ materially from the East Indian plan. A number of reliable observers have tested these stones and found them to be of no value. Among them may be mentioned Fontana, Viand-Grand-Marais, Sir Joseph Fayrer, Vincent Richards and others; it has also been carefully tested by Dr. John Shortt of Madras, who states that he had some difficulty in getting the stone to adhere; dogs and chickens were bitten, but all died. He sums up "There is no truth in the virtues attributed to the snake stone; for it has neither the power to absorb or otherwise neutralize the snake poison from the wound." (*Lancet*, London, 1867, I., 5, 76.)

In view of these unfavorable reports the results of the writer's experiments with the kaolin snake stone will probably be read with some interest, although they were so few in number as to prove little besides the fact that the stone actually did adhere and became charged with blood.

The first experiment was tried

Jan. 4, 1888.—11:55 A. M.—Injected ten minims of glycerine venom mixed with ten minims of water into right leg of chicken, a ligature having been previously applied above point of puncture. A number of superficial incisions were then made in the vicinity of the wound, and the so-called mad stone applied with firm pressure. It held on for a number of minutes and then fell off, and there was a copious flow of blood following its detachment. The stone appeared saturated with blood and was placed in water and cleansed. The ligature was removed from the limb and the fowl liberated.

Jan. 5—12 M.—The chicken is apparently very sick, with quickened respiration, is sluggish, crouches down and is averse to movement. In the vicinity of the injection there is much engorgement of the tissues. There is a copious flow of bloody serum from the wound. From this time up to January 9 the chicken gradually improved, and at this date appears entirely well. It walks around, eats well and the wound is cicatrized. It must be confessed that the result of this experiment was entirely unexpected, as it was supposed that the dose of venom given (10 minims) would produce death in about thirty minutes.

To verify the former test a second was tried.

Jan. 13.—12:15 P. M.—Injected ten minims of venom and ten minims of water into left leg of chicken, no ligature being applied. Multiple superficial incisions were made in the vicinity of the puncture and a new piece of the stone was at once applied. It held on firmly for nearly fifteen minutes and absorbed considerable blood, falling off finally by its own weight. The chicken seemed to suffer little or no inconvenience from the operation, and walked about picking up corn.

Jan. 16.—Is still doing well and the wound healing rapidly.

Jan. 20.—Chicken in perfect health, wound cicatrized entirely.

It should be mentioned that both these experiments were tried upon the same fowl, and it may be that the former inoculation with venom protected it from the second. Another experiment tried upon a fowl failed, the bird dying in about four hours.

In this connection attention is invited to a very interesting paper by Prof. Henry Sewell, of the University of Michigan, published in the *Journal of Physiology*, Cambridge, 1887, VIII., 203, entitled, "Experiments on the Preventive Inoculation of Rattlesnake Venom."

Prof. Sewell assumes in this article that an analogy exists between the venom of serpents and the ptomaines produced under the influence of bacterial organisms. He therefore thought that if "immunity from the fatal effects of snake bite could be secured in an animal by means of repeated inoculations with doses of the poison too small to produce ill effects, we may suspect that the same sort of resistance against germ disease might follow the inoculation of the appropriate ptomaines, provided that it is through the products of their metabolism that bacteria produce their fatal effects." To settle this point his experiments were tried, with the following results: First, that rattlesnake venom, kept for some time in glycerine, underwent a gradual deterioration of power, this view being in opposition to the experience of other observers. Second, that "repeated inoculation of pigeons with sublethal doses of rattlesnake venom produces a continually increasing resistance toward the injurious effects of the poison without apparent influence on the general health of the animals." These results are abundantly proved by the tables which accompany the report.

It may be of interest at this point to give a brief account of the different remedies and plans of treatment that have been suggested from time to time for snake bite. Some years since the attention of scientific men was called to a reputed remedy known as Bibron's antidote, of which Dr. W. A. Hammond, U. S. A., in the *American Journal of Medical Science*, Philadelphia, 1858, n. s., XXXV., 94, 82, states that, according to Prince Paul, of Würtemberg, Prof. Bibron allowed a rattlesnake to bite him on the lips, cheek, etc., and by taking the antidote suffered no inconvenience whatever. Dr. Hammond reports one case in which a man was bitten by large rattler, four minutes after the bite was given a dose of the Bibron antidote, and unpleasant symptoms disappeared but returned; in forty minutes another dose was given. In five minutes all pain had vanished and he recovered perfectly. He had animals bitten: a wolf three months old; thirty minutes after the bite, when symptoms had become marked, six drops of antidote were given; wolf became well almost immediately and ate a piece of meat. Same wolf bitten next day in three places, but there was some delay in giving the antidote; wolf died comatose in twenty-seven minutes. Snake made to bite a dog, which died because antidote could not be given. Forty-five minutes after, same snake was made to bite another dog; in three minutes after the injury the antidote was given before symptoms developed; in fifteen minutes another dose, and in two hours he appeared perfectly well. Dr. Coolidge in same paper reported case of girl fifteen years old bitten at Fort Riley; ten minutes after, the doctor placed a ligature above the bite, made free incision and gave the antidote, repeated twenty minutes after, injecting into the finger Brainard's preparation of iodine. Girl got well with extensive suppuration of back of hand.

The formulæ for the preparation of this antidote is as follows:

BIBRON'S ANTIDOTE.

℞ Potass. iod., gr. iv.
Hydrarg. chl. corros., gr. ii.
Bromine, f. dr. v.

M. Sig. Ten drops in tablespoonful of wine or brandy, to be repeated if necessary. Put in glass-stoppered bottle.

After Dr. Hammond's experiments so much faith was placed in this preparation that it was furnished to all the military posts in the West and South, and the writer remembers to have seen a bottle of it occupying a prominent position in the serpent room of the Academy of Natural Sciences, Philadelphia, then in charge of Prof. E. D. Cope.

Mr. Xantus de Vesey performed a number of experiments with the Bibron antidote, and states that none of his animals perished of snake bite when the remedy was used. Dr. S. Weir Mitchell experimented upon sixteen dogs, with that singular care for which he is noted, with the following results, which are simply negative. Of eight dogs bitten and treated with the antidote two died, while of eight bitten and not so treated three died. It is intended to try the effect of the Bibron antidote again if a sufficient supply of venom can be obtained.

In 1853 Dr. David Brainerd, of Chicago, in conjunction with Dr. Green, proposed a plan of treatment for snake bite, known popularly as the iodine treatment, which attracted some attention at the time, the process being as follows: "10grs. iodine and 30grs. iodide of potassium are dissolved in 1oz. of water. The bitten part is cupped, or a ligature is placed on the limb until the tissues are so swollen with serum as to allow of the injection passing readily through the distended areolar space. A small trocar and canula is then pushed laterally into the bitten part, so as to reach the site of the wound, and the injection effected by screwing to the trocar a small syringe charged with iodine, and so filling the part by pressing down the piston of the syringe, while the cupping glass remains over the wound and exhaustion is kept up with its aid."

Dr. Mitchell, commenting upon the procedure, very justly says: "Apart from the antidotal value of this ingenious means, it is clear that the necessary apparatus is rarely at hand, and that cups of various curves to fit the equally various surfaces of the body, as advised by Dr. Brainerd, are not likely to come into general use in localities where the rattlesnake is found." In Brainerd's experiments one-half of the pigeons treated by Green and himself died, and in Mitchell's experiments out of seven pigeons six died, so that he states that he was unable to confirm Brainerd's conclusions, although he admits that the preparation has a retarding action upon the venom. In cases in which the venom and iodine was mixed together before being thrown under the skin all the pigeons died. It is a fact, however, that iodine does prevent the usual local manifestations to a certain degree. Tannic acid was found to act similarly, and Dr. Mitchell thinks it is due to the action of these agents upon the tissues and not upon the venom.

Different preparations of arsenic have been recommended from time to time by various authors, the famous Tanjore pill having attained quite a celebrity in the East Indies. It is composed of arsenious acid, three East India roots, of which two are purgative and one an active acro-narcotic, mixed with pepper and the juice of the wild cotton plant. In each pill is three-quarters of a grain of arsenic and two of the pills are given at a dose, a single one an hour after. We might suppose from the large dose of the mineral that in some cases if the venom did not kill, the pill certainly would. This preparation has been experimented upon by several persons, who report against its use. Per contra. Dr. J. P. Ireland in *Med. Chir. Tr.*, London, 1817, II., 396, treated soldiers bitten at Santa Lucia by the *fer de lance* with arsenic in large doses, as follows:

℞ Liq. potass. arsenat., f. dr. ii.
Tinct. opii., gtt. x.
Aquæ menth. pip., oz. iss.

to which was added half an ounce of lime juice; this was repeated every half hour for four successive hours—this would be one grain of arsenic to each dose. In addition a carthartic clyster was given, and the scarified parts rubbed with a liniment containing oil terebinthina, liquor ammonia and oil olivæ. He reports four cases cured, and one at Martinique.

Another modification of the arsenic treatment is recommended by Dr. L. Lanszweert, in the *Pacif. M. & S. J*, San Francisco, 1871–2, V., 108. Arseniate of strychnia, 30 grains of pure strychnia in 4 ounces of distilled water, containing 75 grains of arsenic acid, and evaporating until crystallization takes place, drying the crystals and reserving the liquid, with the addition of 8 ounces of alcohol, for external application. For internal use 1 grain of this arseniate of strychnia is mixed with 10 grains of sugar and 25 grains of turmeric, and divided into twelve powders. One powder to be given at the time of the bite and every fifteen or twenty minutes after until better. Upon recurrence of symptoms give every hour. Reports cure, but no details of cases.

Alcohol in various forms is probably to-day the agent in which the great portion of the people of the world have the utmost confidence as an antidote, a faith unfortunately not well founded if we may believe the many experiments which have been tried. According to Mitchell it is merely a counter-active agent, a stimulus simply, which may buoy the patient over the prostration produced by the venom, but as a direct antidote it fails, and this is proved by the fact that a mixture of alcohol and venom is no less deadly than the venom itself. It has been claimed that persons in an intoxicated condition, or those habitually indulging in alcoholic liquor cannot be poisoned by venomous snakes, but abundant proof to the contrary exists, notably in the case of Adam Lake, reported by Dr. Horner in the *North Amer. Med. and Surg. Jour.*, 1831, XI., 227. This man had been in the habit of taking from half a pint to a pint of alcoholic liquor daily, and was intoxicated when bitten by a rattlesnake. Notwithstanding the services of excellent physicians, a number of reputed antidotes being used, he died in less than twenty-four hours. The proper use of alcohol in snake bite, and conditions under which it should be employed, will be considered under the treatment of snake bite further on.

(*To be continued.*)

REPORTS OF CASES.

A CASE OF DYSTOKIA.

By C. H. Peabody, D.V.S.

On the evening of September 3d I was called about four and one half miles from the city to see a mare ten years old trying to expel a dead fœtus. Pulse, 50; respiration, 20; temperature, 101°.

History.—The mare showed symptoms of foaling August 25, when she had quite severe labor pains and rupture of the fœtal membranes. From that time until I saw her, had had considerable straining. On examination I found a thigh and croup presentation. It was impossible to reach either hock; the only portion of the extremities I could reach, was the crural region on the near side.

After lubricating the parts as well as possible with lard and my arms and hands with carbolized oil, I proceeded to shove the fœtus forward and to flex the leg up, but found I could not. I then decided on embryotomy.

Taking a hook-shaped knife I cut through the skin and membranes of the thigh as deep as possible, tearing the muscles with my hand and cutting through. I succeeded in reaching the femur. Taking a small stout cord and passing the end under, bringing it back, I made a slip-knot; having an assistant draw on it I guided it so it encircled the femur in its upper third, then having an assistant use strong and steady traction, and by cutting the muscles I soon had it separated at the neck of the femur.

Leaving the head of the bone in the coxo-femoral articulation after the end of the femur was separated, by steady traction it was easy to remove the remainder of the leg, which gave me more room. I could not turn the fœtus so as to get to the outside of the other thigh, so I cut down on the femoro-tibial articulation the best I could, and by tearing and cutting I at last succeeded in getting a cord round the femur just above the tuberosities so that the cord would not slip; then the assistant commenced strong and steady traction and I succeeded in disarticulating the leg at the femoro-tibial articulation. Then, by raising the end of the femur above the rim of the pelvis and by hard pulling the femur came away. It was then a comparatively easy matter to attach the cord to the tibia, and by traction I separated the muscles and removed the leg, then getting two stout hooks into the fœtus I tried to draw the remainder away, but it would not come. On examination I found the abdomen of the fœtus so distended with gas that it was impossible to pull it through the pelvic opening.

I then carried the knife as far forward as possible, plunged it through the abdominal walls of the fœtus, cutting them as far back as I could. I then emptied the abdomen of all the fœtal organs through the opening, and with the help of two stout men, with a long pull and a strong pull, we succeeded in removing the remainder of the fœtus.

Treatment of the mare.—I washed the womb well out with a solution of carbolic acid, and placed the mare under opium and whiskey for the night.

Next day, September 4, pulse, 60; respiration, 24; temperature, 104°; gave quinine in two-drachm doses, digatalis, opium and whiskey.

September 5. Pulse, 48; respiration, 16; temperature, 101°; same treatment; some discharge from vagina; mare eats well.

September 7. Pulse, 40; respiration, 12; temperature, 100°; gave half the dose of quinine and whiskey.

The mare continued to improve, and on the 10th was turned out to pasture. I am of the opinion that the parts at those times will stand a large amount of abuse and no harm arise from it.

THE HORSE'S TAIL AS AN ANTISEPTIC ATOMIZER.

By P. Peters, V.S.

A year ago I was called in to treat a gelding, which had been treated by two veterinarians for a period of two weeks for colic. The ordinary symptoms of looking around to the flanks, pawing, with attempts to urinate, were present and persistent. I soon found what I have been feeling for for the past fifteen years, namely, a urethral calculus (this was the first one in my experience). It was situated about four inches below the anus, and the size of a large English walnut.

I operated at once, standing, by making an incision on the median line, upon the summit of the tumor, having first washed the parts thoroughly with a bichloride of mercury solution (1 to 1,000), likewise my instruments and hands and those of my assistants. After the removal the gelding relieved his over distended bladder according to mare fashion (through the wound).

I made a bucketful of the bichloride solution, (one drachm to the gallon of water, colored it with some compatible coloring material to prevent it being possibly mistaken for pure water and endangering life). I then ordered the attendant to steep the horse's tail twice or three times a day in the bucket; this was cheerfully done, while the horse attended to the frequent dressing of the wound, purifying of the air and surrounding objects himself. The horse returned to his work ten days later and the wound was completely healed on the 14th day, proving a complete success.

ONE OF THE CAUSES OF SECONDARY HEMORRHAGE.

By the Same.

Some years ago on removing the dressing on the third day from a wound remaining after the excision of a large tumor, I noticed a strong smell of ammonia, and a great tendency of the wound to bleed; the clots were very thin and soft in texture. I argued that according to Richardson's theory the NH_3 formed here, as a result of fermentation, acted upon the fibrin as a solvent; I accordingly dressed the wound with dry oakum dusted well with salicylic acid, with very satisfactory results.

INTESTINAL INVAGINATIONS.

By Dr. T. J. Turner, D.V.S.

The case hereafter noted having come under my observation and to me of much interest, I thought perhaps it might also prove of interest to others. It was a case of invagination in a two-months-old colt of the draft breed. About 10 A. M. of September 20th, Mr. Russel called at my office, and says, "I have a colt about one and one-half miles out, I wish you would go and see. He is a little ailing."

Upon questioning him as to time of colt's sickness, he said, "he seemed to be a little dauncy yesterday, for he did not seem to be hungry, and when he ate a little he walked off and lay down. This morning he would not eat, but lays down considerable. Thought he was swollen in the flank a little." I went out in about one-half hour, expecting to find a case of indigestion with probably some tympanitis. When I arrived at Mr. Russel's, I found colt had been dead about twenty minutes. I suggested a post mortem and we took colt off and held it. Upon opening abdominal cavity, found much gas contained in the viscera and stomach. Then thought I had a case of tympanitis. There was not much but gas in them. I never once thought of invagination, and was removing the viscera when I felt a hard substance in one of them. It attracted my attention, and upon examination I found it to be an invaginated bowel. It was a portion of the large intestine, and adhesions had begun to take place. The upper end was almost in a state of decomposition and was much hypertrophied.

The passage was completely closed, even gas would not pass. I unraveled the invaginated portion and found ten feet involved. Colt defecated that morning. How would you be able to diagnose it? I think not at all, and that in this inability we may treat for tympany, etc., when, in fact, some cause such as this may be the real disturbance.

FILARIA CAPILLOSA OR OCULI.

By M. Francois.

A case of the above fell under my notice recently with the following history:

About two or three months ago a small white worm was noticed in the anterior chamber of the left eye of a small bay gelding of good breeding, used for livery purposes. The worm was small when first noticed, but has grown steadily until, at present, it is three or four inches long and is in constant motion. The eye at present is bluish white or milky color, so that the anatomical features of the worm as mentioned in Gresswell's Practice of Equine Medicine, page 343, are not readily discerned. The horse seems to suffer no pain, but the vision is greatly impaired.

BIBLOGRAPHY.

TRATTATO DI TECNICA E TERAPEUTICA CHIRURGICA GENERALE E SPECIALE DEGLI ANIMALI DOMESTICI DEL DOTT. N. LANZILLOTTI BUONSANTI*.

We proffer our sincere thanks to the editors of this volume, (the first of the work), for the compliment they have paid us, and for the opportunity they have given us for the examination of this portion of one of the most complete text books ever published on the operative surgery of domestic animals. The statement that the author is Dr. Lanzillotti Buonsanti, Professor and Director of the School of Veterinary Medicine of Milan, is perhaps all that is necessary in the way of an indication of the quality of the work. An indefatigable worker, an able writer, an active practitioner, and a veterinarian of high repute, his opportunities have been so improved as to entitle him to a place among the foremost authorities of Europe, and to constitute in advance a suitable voucher for the merit and value of the present work. Considering the number and the character of the authorities upon the subject, already to be found in the writings of existing French, German and English authors, it would seem scarcely possible to increase the sum of the knowledge already available by the veterinarian practitioner, and yet we believe that Dr. B. has both in the amount of material he has furnished, and in the manner of its presentation, surpassed his predecessors.

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* Treatise of general and practical, technical and therapeutical surgery of domestic animals. By Doctor N. Lanzillotti Buonsanti.

The six hundred pages of which the book consists, illustrated by over four hundred wood cuts, are divided into two principal parts, the first treating of general technical surgery, and the second of operations in general, having special reference to the art of minor surgery. In the first part some generalities are followed by remarks upon the various means of contention of all animals, either in the standing or the decubital positions, and both with and without anæsthetics, followed by observations on the simple division of tissues; the various means of hemortasy; the means of reunions; the use of antiseptics, with their varieties, and the applications of bandages and dressings. The second part describes the various forms of the cauterization, the different modes of venesection, the application of setons and other counter-irritants; the use of hydrotherapeuty; the massage process and the application of electricity, followed by instructions in the various modes of administration of drugs through the mouth, the respiratory apparatus or the skin. This part is completed by a reference to the history and the use of vaccination in the treatment of such diseases as pleuro-pneumonia, the various forms of anthrax, variola, rabies, etc. A short appendix on the removal of foreign bodies, and on grafting, completes this excellent addition to the veterinary literature of Italy.

SOCIETY MEETINGS.

NEW JERSEY STATE VETERINARY SOCIETY.

The regular meeting of the New Jersey State Veterinary Society was held on Thursday, November 12, 1888, at Taylor's Hotel, Jersey City, N. J.

Dr. Joseph Nayler occupied the chair on account of the President, Dr. J. C. Corlies, not being present, and the meeting was called to order at 3 P.M. The regular order of business was proceeded with, and Dr. Albert H. McIntosh of

Morristown, and Dr. Paul Mill of Jersey City, were elected as members, as both are graduates from regular veterinary colleges.

Dr. Wm. Herbert Lowe of Paterson, read a lengthy paper on "The Hypodermic and Intra-trachical Methods of Exhibiting Remedies in Equine Practice," after which a very lively discussion took place, in which all members present took an active part.

Dr. Joseph Autenrieth promised to read a paper at the next meeting, which is to be held at Paterson, February 7, 1889. His paper will be on an interesting subject to all practicing veterinary medicine and surgery, and a lively debate is expected to take place.

Charles Kuehne, D.V.S., *Secretary.*

NOTICE.

Wanted, a copy of "Parasites," also "The Internal Parasites of our Domesticated Animals," by T. S. Cobbold.

M. Francis.

CORRESPONDENCE.

PRACTICE TO DISPOSE OF.

Will you please insert a notice in the Review, that any qualified veterinary surgeon seeking a location would do well to address me, as I intend to discontinue practicing here. This is a desirable location, as Burlington has a population of over thirty thousand, with a good farming country surrounding. I am the only qualified veterinarian within a radius of forty miles, and will give satisfactory reasons for wishing to sell.

Yours Respectfully,
E. S. Johnston,
Burlington, Iowa.

NEWS AND SUNDRIES.

An Act to revise the law in relation to the suppression and prevention of the spread of contagious and infectious diseases among domestic animals, etc.

Section 4. Any person who, knowing that any contagious or infectious disease exists among his domestic animals, shall conceal such fact, or knowing of the existence of such disease, shall sell the animal or animals so diseased, or any exposed animal, or knowing the same, shall remove such diseased or infected animals from his premises to the premises of another, or knowing of the existence of such disease, or exposure, shall drive, or lead, or ship the same by any car or steamboat to any other place in or out of this State, and any person or persons who shall bring any such diseased, or knowingly, shall bring any such exposed animal or animals in this State from another State; and any person or persons who shall knowingly buy, receive, sell, convey or engage in the traffic of such diseased or exposed stock, and any person who shall violate any quarantine regulations established under the provisions of this act, shall, for each, either, any, and all acts above mentioned in this section, be guilty of a misdemeanor, and on conviction thereof, or of any one of said acts, shall be fined in any sum not less than $25 nor more than $200, and imprisoned in the county jail until the fine and costs are paid, and shall forfeit all right to the compensation for any animal or property destroyed under the provisions of this act.

The Commissioners have issued the following:

WHEREAS, Actinomycosis, or "lumpy-jaw," and tuberculosis, are dangerously infectious diseases:

Therefore, be it known that all persons detected in violating the act of which the above is an extract, by buying, selling, shipping, or in any wise moving such cattle so diseased, will be prosecuted, and quarantine enforced against such animals.

[Signed,] JOHN M. PEARSON,
H. MCCHESNEY,
E. S. WILSON,
Live-Stock Commissioners, Illinois.

CATTLE DISEASE IN CALIFORNIA.—From information received, cattle in the Golden State are suffering with a number of diseases, which are likely to play sad havoc amongst them. Texas fever, aotinomycosis, tuberculosis and anthrax have been recognized by Dr. T. Bowhill in a recent official investigation that he made by the direction of the Bureau of Animal Industry.

AMERICAN VETERINARY REVIEW,

JANUARY, 1889.

EDITORIAL.

LARYNGOTOMY IN HORSES.—The error of our printers in the last issue—report of our trials—three cases—three failures—the reason: Is it our modus operandi?—or what?—the danger of the operation falling into the hands of quacks—how easy imposition can be practiced with regard to it, as evidenced by the case recorded in the Philadelphia *Press*. THE NATIONAL PATHO-BIOLOGICAL BILL.—Will it receive the endorsement of the profession?—will it pass Congress? SWINE PLAGUE COMMISSION.—The answer of the Chief of the Bureau of Animal Industry to the challenge of Dr. F. S. Billings—a petition to the Commissioner of Agriculture—the committee appointed an impartial and well selected nomination—Dr. Salmon's letter. VETERINARY ASSOCIATIONS.—Their formation in the East results in their organization in the West—new ones in shape—Indiana—Calfornia—our remarks of last month misinterpreted—Dr. Carpenter's letter—societies with more stringent by-laws can now be formed better than at first. CASTRATION NOT VETERINARY SURGERY.—Letters on the subject—the REVIEW the servant of the profession.

LARYNGOTOMY IN HORSES.—After reading our editorial remarks touching the surgical cure of roaring in horses in our December number, our readers must have been somewhat surprised, when looking for a report of our experience with two patients of that description which had been prepared for that issue, to find that for some reason it had failed to find a place. We wish to say that the fault for this omission is not ours, but it is due to a mistaken exercise of responsibility on the part of our printers, who, having been furnished with an excess of material for the December issue, felt themselves justified in exercising their discretion in selecting from the corrected proofs such articles as they supposed might without damage be postponed for publication in the January number. Unfortunately, in doing this, the article referred to was included with a number of others, and our remarks became somewhat incoherent in consequence. To-day we print the reports in question, and add to them that of another case, which, unfortunately, was followed by a result similar to the others. If we may judge by these three cases, either the operation must be a failure, or there must be some defect in the *modus operandi* of our procedure. But while we may be willing to wait for additional proofs on this point, and are not yet ready to condemn definitively an operation which we apprehend would not have been ignored for nearly thirty years if it had really effected results which it seemed to promise, we still must caution our friends against too hasty an adoption of their conclusions. And we must also suggest to them the propriety of warning the public in respect to the danger incurred from the practices of imposters who abuse their victims' confidence by *warranting a recovery* in all cases, and without reference to existing distinctions in the pathological features of the disease. The operation is a simple one, so simple, indeed, that any daring and enterprising man, even without a knowledge of anatomy, physiology or surgery, may advise and perform it. And this may be done in such a way that the owner of a roarer, which may be otherwise a very valuable animal, may consent to or suggest it, to find himself not only the sufferer by a pecuniary loss without benefit to the horse, but must also accept the risk to which the animal may be exposed during the operation. Neurotomy, though an excellent, useful and justifiable operation, and which has been a means of relief in innumerable cases, lost at first, and especially in this country, much of its prestige because of its improper application. The confidence of the people in the usefulness of laryngotomy is in equal danger of being destroyed, and, in fact, the danger in our opinion is even greater, from the fact that the honesty of purpose of the operators may not always be liable to question, because of the simplicity of the steps of the operation. These remarks were suggested by the reading of an extract printed in a Philadelphia paper, the tenor of which, even while allowing for the fanciful description of the inexpert and unscientific reporter, indicates the dangers to which we are alluding, and the necessity and duty of bringing our influence to bear on so important a question as the propriety and impropriety of the operation. The extract, which we copy below, would excite interest as a curiosity in the minds of Dr. Fleming and Professor F. Smith, and must give rise to not a little distraction of mind among our friends:

LARYNGOTOMY OF A HORSE.—A SIMILAR OPERATION TO EMPEROR FRIEDRICH SUCCESSFULLY PERFORMED.

PHILADELPHIA, Dec. 7 (Special).—The *Press* to-day states that Dr. S. W. B. Werntz, the veterinary surgeon, of No. 4,527 Lancaster avenue, performed the operation of laryngotomy on the trotting horse King R., at his stables yesterday morning, assisted by Dr. S. Harger. The operation, which is similar to that performed on Emperor Freidrich I., is said to be the first one that has been performed on a horse in this State and probably the first in the country. Cases of this kind are exceedingly rare and in a great many instances prove fatal.

The horse, which is owned by C. S. Vacey, is valued at $3,000, and has been suffering for weeks from what is technically known as "weazing." While in this state the horse is able to breathe on only one side, and the symptoms exhibited are the same as those in the case of a human being. King R. contracted the disease from a previous sickness. The left side of the horse from the glands in front of the heart to the brain was paralyzed and prevented his breathing and from swallowing food or water. Yesterday at noon King R. was brought to the stables adjoining Dr. Werntz's house. Dr. Cox and Dr. Tintsman were present and witnessed the operation, which lasted nearly an hour.

The animal was cast on his back and his legs secured to the ground by means of big iron chains. After having the horse securely tied the larynx was laid open about two inches and an incision about two inches long was made directly over it and through the skin and muscles of the neck. A large quantity of pus and fat was accumulated at the edge of the larynx, which was removed. The thyroid ligament was cut through and an incision made in the cricoid cartilage.

After this was done the nerves controlling the larynx and muscles were put in place, and the left side of the larynx, which before the operation was useless, was found to be working properly, and the animal breathed easily through both sides of that organ. The incision in the neck was sewed up and the horse released. After the wound was sufficiently tight to admit of food being passed through the mouth, a bucketful of feed and a pail of water were placed in front of him, and in a few minutes they were consumed, the horse seeming to undergo no pain while swallowing the food. About a half pint of blood was lost during the operation.

After being placed in the stall the horse rested comfortably and was in better condition than before operated upon. Dr. Werntz believes the horse will get well.

THE NATIONAL PATHO-BIOLOGICAL BILL.—We print to-day the text of the bill to which we referred in our last number, having for its object the establishment of a national patho-biological laboratory, and which is to be introduced in Congress during the present session. Our purpose in this is to enable our readers to obtain a knowledge of its objects, and if it is thought to be expedient, to enlist their assistance and influence in securing its proper consideration and passage. Its objects are minutely defined, and though its provisions may need change and modification, the beneficial provisions it embodies are too obvious and important to escape the attention of those who are interested in the study of the true nature of contagious diseases.

Swine Plague Commission.—The need of a tribunal like that for which Dr. Salmon petitions is illustrated by the controversy which has been for some time maintained between disagreeing investigators of the nature of swine diseases. It is in consequence of this variance in the opinions held by these gentlemen, and in answer, we believe, to a kind of challenge issued by one of them, Dr. F. S. Billings, that the worthy Chief of the Bureau of Animal Industry has addressed the letter to the Hon. N. T. Coleman, United States Commissioner of Agriculture, which we copy below.

The response of Commissioner Coleman to Dr. Salmon's recommendation has been prompt and favorable, and the Commission, which has already been appointed, will consist of Prof. T. T. Burrill, of the University of Illinois, Dr. Wm. H. Welch, of Johns Hopkins University, and Dr. E. O. Shakespeare, of Philadelphia. These gentlemen will not only investigate the subject of swine disease, but also adjust any other questions which may be incidentally in dispute.

To borrow the language of the *Breeder's Gazette*, "the high standing and scientific qualifications of these gentlemen for the character of the work they have been designated to perform, are too well-known to need comment, and whatever result they may reach in their investigation will doubtless be accepted by the whole country with confidence." We subjoin Dr. Salmon's letter:

United States Department of Agriculture, Bureau of Animal Industry, Washington, D. C., Nov. 27, 1888.—*Hon. Norman J. Coleman, Commissioner of Agriculture*—Sir: Among the most important scientific researches undertaken by the Department of Agriculture since its formation are the investigations in regard to the diseases of swine. There is no question of greater interest to farmers, no direction in which the results of scientific discoveries should be of more value. Since 1884 every effort has been made to press forward such investigations and to secure reliable results. The laboratory space has been increased, the most perfect apparatus made in the world has been obtained, the work has been divided, and thorough experts placed in charge of each branch of it. The result has been the elucidation of these formerly mysterious maladies and the publication of reports which have received the praise of most scientists at home and abroad. It may be truly said that for accuracy of work and for the originality and value of the conclusions these reports have led the investigations of the world in this class of disease.

Unfortunately the confidence of American stock-owners in scientific work in general, and in that of this department in particular, has been shaken by violent attacks which originated with a professor in the University of Nebraska. In these attacks he has been assisted by the State Agricultural Experiment Station, which has published and distributed to the world a bulletin of over four hundred pages, the greater part of which is devoted to misrepresenting and distorting the statements in the reports of this bureau and in laying claims to discoveries which are by no means demonstrated, but which it is asserted disprove the work of this bureau and indicate measures of prevention different from those heretofore recommended. One of the regents of the University of Nebraska and a professor in the University of Ohio have made similar assertions, and more recently it is reported that the National Swine Breeders' Association has passed a resolution asking that the Commissioner of Agriculture provide for an independent investigation of this subject.

Considering that the questions involved are of great importance to the country and should be definitely passed upon at an early date by competent special ists; considering also that these questions are such that none but specialists are qualified to judge of their merits, either from the reports or from any other arguments that might be furnished, I would respectfully recommend the appointment of a board of three disinterested scientists to investigate and decide the points at issue. I would also recommend that at least two of these experts should be selected from among those named by the professor first mentioned as suitable men to decide upon such difficult scientific problems.

The laboratory and experiment station of the Bureau of Animal Industry will be placed at the disposal of such a board, as will also all other facilities for the investigations.

Conscious that the scientific work of this bureau has been systematically, thoroughly and honestly performed, I invite the closest scrutiny, in the firm belief that our discoveries will be confirmed, and that when our farmers understand the character of the work which has been done they will appreciate the value of the department more than before and have greater confidence in its efforts in their behalf.

(Signed) D. E. Salmon,
Chief of the Bureau of Animal Industry.

Veterinary Associations.—The measures adopted some few years ago by veterinarians in the Eastern States for promoting the formation of organized societies, have been gradually producing their desired results and taking effect over an enlarged area, until now we occasionally hear of the formation in the Western States of such organizations. Ohio, Illinois, and Kansas have for some time had their State societies, and recently we hear of a new organization in process of formation in Indiana, while, as we reported in our December number, California has also shown a disposition to fall into line.

Difficulties have doubtless occurred in respect to the most proper course to be adopted in the organization of these institutions. Thus, the Indiana State Veterinary Association, we understand, is in favor of restricting its membership to graduates of good and recognized veterinary schools, and the California institution aims to establish itself as the center of a scientific body worthy of the Golden State. Our late announcement of the formation of this organization, and our remarks upon the urgency of the need in which it originated, have induced one of our correspondents to write us a letter, which we print elsewhere, in which the author aims to show that we have done injustice to the veterinarians of California. If our remarks were susceptible of such an interpretation we owe an apology to our friends which we freely tender. We are very far from intending any injustice, and would by no means disparage the motives or offer any obstacle to the efforts of the profession in California. The letter of Dr. Carpenter is ably written and speaks to the point, and with him we need not hesitate to quote a motto which we adopted years ago for our own, to wit, "Quackery and science are inconsistent." Our own experience corroborates that of many societies now in existence, in emphasizing the truth and the wisdom of that axiom. If societies can be safely established with the inclusion of ignorance and quackery in their organization, it is the proper thing to do, and it will be well for the new organization to bear this fact in mind. In any case it may be well to remember that scientific societies coming into existence at the present time can better afford to do so than those which were born years ago.

Castration not Veterinary Surgery.—We have received two letters on this subject which we print in another place. The subject, as we have from the first considered it, is an important one, and judging from the correspondence it has evoked, we have not erred in giving it the attention it has received at our hands. We consider the decision to have been a mistake and to embody a wrong interpretation of our calling, and that it has given rise to an erroneous judgment, but whether it is expedient for the profession or its organs to take any further action in the matter, is a question that we do not at present feel able to answer. If the profession wishes the Review to take the steps suggested in Dr. Pendry's letter, we have only to say that the Review is the servant of the profession, and will always be found ready to exhaust its endeavors in behalf of the common interest.

ORIGINAL ARTICLES.

PARTURIENT APOPLEXY.

By Geo. Bridges, D.V.S.

(A paper read before the Connecticut Veterinary Medical Association.)

Mr. President and Gentlemen :

The subject I am to present to-night to you for consideration is one that has for years perplexed our professional brethren, and, I am sorry to say, we are not much nearer to a solution of the question than were our predecessors. We fail to glean much from authors as to its etiology, consequently we are at sea as to its treatment.

Parturient apoplexy or milk fever, as it is commonly and erroneously called, is met with mostly in the bovine species. Some breeds of cattle are more subject to it than others, and I never remember seeing a case in the equine species, but there are, I believe, some few cases on record. The majority of my cases have been among the high-bred Jersey, very few among the common grades. Beef cattle are rarely ever affected with it. Holsteins, although enormously large milkers, can record but few cases.

Parturient apoplexy is without doubt, one of our greatest bugbears in practice, especially in the rural districts. Writers upon the subject have so many varied opinions that we are left entirely helpless as to a solution of the enigma, consequently we are forced to rely entirely on our own observations, after which we can carefully compare so that all errors we may have fallen into from, perhaps, to great an imaginative mind, may be rectified.

It is with this purpose I come before you to-night with this paper, more to compare my own observations with yours than to advance any new theory or treatment.

In this era of the great advancement of veterinary science it is left with this generation to solve the causes of parturient apoplexy, so as to be able to treat the disease intelligently. I trust the day is not far distant when this will be accomplished by some one among our number. We will take the symptoms as I have observed them from the commencement of the attack.

An animal after having apparently gone through with parturition all right from that on till, perhaps, the three days or longer, will suddenly develop the following symptoms:

She may be eating contentedly, then all at once stop, have a sleepy, dejected look, may have a starring coat, perhaps shiver; after a short time there will be quivering of the muscles of the flank, soon extending to the whole of the gluteal region; then, as suddenly as it came, all symptoms may pass off, cow going to eating, appear bright, which may last for a short time; all at once then will be a hurried evacuation of fæces as though the intestinal tract was undergoing a nervous shock; cow again by this time looks alternately sleepy and startled, pupils of the eyes will be somewhat dilated, shortly the back will drop slightly, anus and vulva will be much constricted, a slight moan at this time will escape from the animal, as though in pain; shortly will lift one hind leg, then the other, switch the tail, seem very uneasy; muscles will quiver over gluteal region more marked than ever; soon the animal reels and staggers, partially falls, rises and falls again, going down generally never to rise. The pulse may not be altered much all through the above symptoms, but will grow weaker until it soon becomes imperceptible. About this time the animal becomes comatose; stertorous breathing will be a marked characteristic at this stage; power of deglutition may be nearly or quite lost. The temperature, which has previously been but little altered, will now gradually fall, perhaps as low as 95° Fahrenheit; on passing the catheter the bladder will be found filled with urine of rather a high color. The discharge from the uterus will be entirely stopped. Passage of fæces at this time will also be stopped. On removing what may be there from the rectum, will find a mixture of hard and soft fæces. All secretions from this on are generally stopped during the comatose state. Some few cases secrete urine, but the majority with me have not during the comatose state. The milk secretions are suspended almost if not entirely. What little milk we may find will be altered in color and consistency. If the cow gets well all these symptoms may change back to normal condition after twelve or twenty-four hours or may prolong the time to eight or nine days. (The comatose condition lasts for twenty-four hours usually). I remember three cases that lived for eight days with parturient apoplexy; two of them died and the third got on her feet on the eighth day and made a slow recovery.

The post mortem has never revealed much. We find different conditions, due chiefly, I think, to the time of the animal's death; mode of dying having much to do with the result. Some authors and others that have written for the journals claim to have found an alteration in the spinal cord or its meninges. Post-mortem has never revealed any such lesion with me. Some report clots on the brain. In one that died quickly I found the brain congested; in another a rupture of one of the blood vessels had taken place; that one died in twelve hours from the time it went down. A post-mortem of the renowned Jersey cow *Ona*, aged ten, showed no lesions anywhere except the heart. She lived nine days, becoming bright, eating some and taking plenty of nourishment in the shape of gruel with a relish; when all at once there were severe spasms around the region of the heart, what was apparently to me a paralysis of that organ; these symptoms continued but a short time when they put an end to her existence. The heart on post-mortem was flabby, both cavities entirely empty and contracted, the organ having undergone fatty degeneration.

What the cause of parturient apoplexy is, I said previously, an enigma. There is no doubt, as some authors claim, a predisposing cause, but how often we see it attack those that had been well guarded from all pre-disposition.

Last summer during July last, I had the opportunity to watch three cows that were to calve about the same time, all about the same age. All three were fat, fit for beef. One I prepared and watched carefully, the other two had no preparation except that one was taken from pasture and put in a small enclosure of about an acre with short feed, the other run as usual in the pasture till the time of calving. The one I prepared and had carefully fed, had a good place to exercise in and was looked to carefully by her owner, a man who has had far too much practical experience with this disease to benefit his pocket, and who is unusually observing and intelligent. That cow was the worst case I ever had; lived for six days, then died, never once responding to any treatment from the beginning to the end.

The other one, more plethoric if any, that was confined in one acre field with short feed, came near dying trying to have her calf, afterwards doing nicely. The third went down with parturient apoplexy twenty-four hours after calving; in twenty-four hours more she was on her feet; she got well; so much for predisposing causes. As to the actual cause it seems to me that Barlow's theory is the most reasonable, according to my observations of the symptoms, that it is a general derangement of the sympathetic nervous system. What causes that derangement is not explained. There must be some explanation when we bear in mind how important a part the sympathetic nervous system plays in parturition.

Fleming says the sympathetic nerve is most concerned in the uterine contractions, as it is the motor nerve of the organ. Its influence is called forth by the irritation produced on the terminations of the nerves, on the inner surface of the uterus by reflex action, the irritation being transformed into involuntary motor activity. If this is true, we might not be amiss in looking here for the cause. I have thought that as parturient apoplexy generally follows an easy and quick birth, that in some manner uterine contraction does not take place with that rhythm so conducive to a normal and healthy parturition; perhaps there is an irritation of the membrane lining the uterus, brought about by the contents left in the cavity of that organ, which in some way deranges the sympathetic system.

Perhaps we may after awhile find some particular parasite either in the blood or cavity of the uterus which brings about the same irritation. One thing is evident to me, that there is a derangement of the sympathetic system, for almost at once one organ after another ceases to perform its functions. This chain of nerves playing so important a part on the action of the circulation, could bring about a rush of blood to the head. Why then could it not produce apoplexy by its control *over* the blood vessels.

Chauveau says it holds under its control the circulating phenomena, especially in the capillary plexuses, causing these canals to dilate or contract, and thus diminish or accelerate the flow of blood in them. By this action on the blood vessels it may have a secondary influence on the nutrition of the organs to which these vessels are distributed.

This will probably explain the different opinions on the condition of the brain as found on autopsy. Some find congestion, others anemia of that organ; it will also explain why all the functions of the different organs in the body are interfered with.

You probably question me as to treatment? What answer can I make you except to say that as we do not know positively what the cause of parturient apoplexy is, we have no line of treatment that we can call specific. I think each individual case should be treated according to the symptoms, whatever the stage is at the time we are called. I will say if your success has been no better than mine, I can deeply sympathize with you. With me there is one thing I can say and that is, since I have abandoned all heroic treatment I have had much better success. What earthly good can large fluid doses do when all the digestive organs are at a standstill, and, perhaps, the power of deglutition lost? Will it not rather do harm than good? If the cow is standing when we are called, then perhaps, a depletive measure, carefully regulated according to condition of the patient, may do good, but with me when I have found the animal comatose, I have given medicines sparingly and carefully. Those animals that have made the best recovery were the ones I did not give large doses of physic to. In them I have felt hardened fæces pass into the rectum and the cow get up and go to eating, not passing any fæces for some hours afterwards. Stimulants in small quantities, often repeated, given with a small syringe, so that the medicine has a chance to pass through the fauces to the stomach, instead of partly running into the bronchial tubes, as it will surely do if given in large quantities. I gave belladonna in two cases that recovered and it seemed to act very nicely, following it up with stimulants. I tried the same treatment on others and could not see any benefit from it or the stimulants either. Mustard water rubbed well in along the spine acts very nicely. If there is any treatment at all to recommend it surely is of a stimulating nature rather than depletives.

Hill speaks of a preventive treatment as being the best cure. I agree with him, but am sorry to say I have not had much benefit from preventives. Take the first case of the three I spoke of previously, along with another fatal one. No animal could have been better prepared or more care taken of as to feed, exercise, etc., than they were. I gave chlorate and nitrate of potash to one a short time previous to calving; also gave a laxative dose two days before and again right after calving; this proved to be a very bad case. Another that died was prepared by a laxative dose before calving and a dose of physic after, all of which acted nicely, but she died twelve hours after she went down. One of my patrons thought perhaps his stables and surroundings were not healthy. I disinfected with chlorine gas, and sent some to other places to calve, but the result was the same.

Prof. McIntosh, of the veterinary department in Illinois University, claims to have good results with the following:

Spts. nit. ether, xx ℥
Spts. amm. arom., x ℥

Mixed, give three ounces in a half pint of water every half hour till five doses are given, then three ounces every hour till the remainder is given. He recommends also large doses of epsom salts, with counter irritation to back in shape of mustard. He says they lie from twelve to twenty-four hours, then get up. He claims never to have lost a case when the animal has lived long enough to take all of the stimulants.

Breeders of Jersey cattle claim to me they always cure it, but I am afraid they are poor diagnosticians from their descriptions. Looking to the uterus as being the first organ affected in this disease, I have thought it best to have the uterine cavity washed out carefully with a corrosive sublimate solution and also carbolic solution. I cannot speak of results from experience; have only tried it on one case; that case, however, got well, but I believe it as good a preventive as any we have, if it is done right after calving, and I think it should be done with all cases we are called to treat, as it will no doubt facilitate a recovery. Thanking you for your kind attention, I leave the subject in your hands, trusting we may all derive benefit from its discussion.

MALADIE DU COIT.

By W. L. Williams, V.S.

Report on the outbreak in Illinois to the State Board of Live Stock Commissioners.

(*Continued from page* 410.)

Treatment.—The chances of effecting a cure, or exerting by any known treatment any marked influence on the course of the disease, are very remote. Many different lines of treatment have been proposed, but their beneficial effects have not been well demonstrated.

Locally we should expect benefit in the earlier stages of catarrhal inflammation of the vagina and urethra, from emollient or mildly astringent injections, and later by the use of remedies of a more decided astringent nature—nitrate of silver, sulphate of zinc, aulphate of copper, etc. In three stallion cases of over one year's standing, showing well marked urethral irritation and discharge, these symptoms were promptly eliminated by cauterization of the urethra throughout its entire length with solid nitrate of silver. We would naturally expect benefit, in cases of long standing, from the use of alteratives, such as mercury, iodine and arsenic; and where used in the present outbreak they have at times appeared to have a beneficial effect, or at least it could not be seen that mercury aggravated the disease, as some authors have stated. Castration is said to have a beneficial influence on the course of the disease in stallions, but it has not been tried during the present outbreak.

Prevention and Extirpation.—We are suddenly awakened to the existence of this, to us, hitherto unknown disease in our midst, and if not dealt with firmly and heroically, it must prove a serious scourge to the horse interests of Illinois and the country at large, and it is to be hoped that the sad experience of De Witt Country may prove a timely warning.

The work of control and extirpation has surpassed our expectations in effectiveness in many particulars, due largely to an unusually hearty coöperation of almost every horse-breeder in the infected district, frequently at no small personal sacrifice; and to a continuance of this same earnest assistance we must largely look for an effective controlling and stamping out of the disease.

At the beginning of the investigations, Messrs. Harrold & Culbertson and Foley & Seniff furnished a complete list of all mares bred to their stallions since affected, and other stallion owners followed their example freely and by these lists every mare was traced as far as possible, and if found alive in the State was quarantined; and every diseased, suspected or apparently at all dangerously exposed stallion was treated likewise. All exposed mares in the State were personally inspected by Dr. Casewell or myself, or their condition otherwise reliably learned, and the notices of quarantine were served by Dr. Casewell, myself, or W. H. Wheeler of Clinton.

Every stallion kept for public service in the entire infected area, so far as could be learned, and nearly every stallion within ten miles of that area, were personally inspected by myself, and the owners and keepers cautioned and advised to the best of my ability.

Since quarantining, three affected mares have died, and nine have been killed by agreement. All but two of the affected stallions (XV and XIV) have died or been killed, and the two remaining ones, owned by J. Fisher, are kept in Clinton, where their movements can readily be followed.

I firmly believe that we now have the disease fully under control in Illinois, and that all we now need is to permanently fix our grasp.

Fortunately most of the affected mares are dead, and there now remains twenty-one affected in De Witt, one in Piatt and one in Peoria County. Some of these mares are so badly affected as to be comparatively worthless, others are in moderate, while others are in good condition and apparently perfectly sound, and with this latter class rests the greatest danger of renewal of the losses of the past two years. The history of the disease in foreign countries repeats the warning over and over: Never under any consideration allow a mare affected with equine syphilis to be bred again.

The failure to heed this warning evidently explains the fact that wherever the disease broke out once, it was very likely to reappear three to six years later, through the over-confidence of the owner of an apparently recovered and perfectly sound mare, by again breeding her to a stallion. Hence, at whatever labor or cost, all affected mares should either be killed or held rigidly in quarantine and confined to the townships where found and where stallion owners are acquainted with the disease.

Killing is certainly preferable, wherever it can be readily done, otherwise years of careful watching and supervision must ensue. As to the exposed mares which have not at any time shown any signs of the disease, I would recommend that they be released from quarantine two years after their last breeding to an affected stallion, after the following evidence is produced: first, the certificate of a perfectly reliable veterinary surgeon that he has made a careful personal inspection, and that he believes the mare perfectly free from equine syphilis; second, an affidavit by the owner, identifying the mare, giving a history of her breeding for 1885, 1886 and 1887, and affirming that to the best of his knowledge she has never shown any signs of equine syphilis.

Stallions.

I would recommend that the Smith & Ledden stallion X be released from quarantine in the spring of 1888, after satisfactory inspection, he having never, so far as can be learned, served any evidently diseased mare, has shown no signs of disease himself and has transmitted the disease to no mares.

Numbers IX, XIV and XV should be held firmly in quarantine until dead or castrated.

In further preventing the spread of the disease I would recommend that the accompanying list of exposed and diseased stallions and mares be printed in convenient form and widely distributed among stallion owners, along with such other matter pertaining to the disease as you may deem best. Among which I would suggest—

1st. A warning to all stallion owners that allowing any of the mares described in the list to be bred to any stallion, except the owner produce a certificate of release from quarantine from the Secretary of the State Board of Live Stock Commissioners, would subject such stallion to indefinite quarantine.

2d. A brief summary of the laws regarding quarantines and their violation.

3d. A concise description of equine syphilis and also of the benign exanthematous venereal disease of horses, equine chancroid.

4th. That no stallion owner should allow his stallion to serve mares whose history cannot be satisfactorily traced.

5th. That no stallion be allowed to serve a mare that has any discharge from the vagina or swellings of the vulva, nor mares that show unusually persistent œstrum (heat), nor mares that are extremely old, debilitated or unthrifty in appearance, nor that present any discharge from the nostrils or show unhealthy sores on any part of the body, or mares partially paralyzed or unaccountably lame in the hinder parts, especially when accompanied by bad general health.

6th. That all stallion owners should take the precaution to have the penis of the stallion thoroughly washed immediately after serving each mare.

7th. That no owners of mares should permit them to be served by any stallion presenting any enlargement or swelling of testicles, scrotum, penis, sheath or prepuce, or any undue pendency of penis or testicles, or any unnatural discharge from the penis, or any abrasions, ulcers or sores of any kind on the penis, prepuce or sheath, or having any discharge from the nostrils, or any unhealthy sores on any part of the body; or any stallion showing an unaccountable lameness, stiffness or weakness of loins, except the owner of such stallion produce a certificate from a qualified practitioner of undoubted standing, certifying that such stallion is free from any contagious or infectious disease.

The tabulated list of exposed mares being too long for insertion, the following summary is inserted instead.

Mares dead of disease previous to date of investigation		47
Died since quarantined (of equine syphilis).		3
Killed by orders of Live Stock Commissioners		9
Affected, not found		4
" in quarantine	23	
Apparently well, in quarantine	193	
Total remaining in quarantine	216	216
Died or killed since quarantine	12	
" from accident since quarantine	2	2
Total originally quarantined	230	
Animals supposed to be well, not found		116
Total mares exposed		397

Of the four diseased mares marked "not found," one has later been found and killed at Appleton, Wis., two are the Sandusky Wilson mares (see foregoing report under "Origin of Disease in DeWitt Co.); the fourth was sold to unknown shipper, previous to investigations.

The apparently well mares not found were mostly included in a lot of 100 Texas mares, sold in St. Louis, supposedly for the Boston market, for street car work. The others were sold to various shippers, for draft purposes.

The list of stallions being of less length is inserted in tabulated form.

LIST OF EXPOSED STALLIONS, with Number of Mares Served after Earliest Supposed Exposure.

Latin numerals refer to mares, Roman numerals to males, throughout report. The tabulated list of mares is too extensive for insertion here.

Number.	Owners.	P. O. Address.	Breed.	Description.	Condition at date of Quarantine.	When Exposed.	To What Mare.	When Quarantined.	No. of Mares Served.	No. of Mares Affected.	Percentage of Mares affect'd	No. of Mares Dead.	Percentage of Mares Dead.
I and II.	Harrold & Culbertson.	Wapella, Ill.	French Draft.	Gray.	Affected.	1884–6	377, 378*	July 25, 1887					
III–VI.	Harrold & Culbertson.	"	"	Black.	"	1886.	"	" 21, "	177	36	$20\frac{2}{3}$	29	$80\frac{5}{9}$
VII.	Harrold & Culbertson.	"	Grade.	Gray.	"	"	"	" " "					
VIII.	W. R. Carle.	"	French Draft.	"	"	"	Unknown.	" 22, "	9	2	22	2	100
IX.	Geo. Halsey.	"	Grade French Draft.	Black.	Apparently Well.	1887.	145 †	" 15, "	1	0	0	0	0
X.	Smith & Ledden.	"	French Draft.	Gray.	Apparently Well.	"	5, 131, 142‡ 356, etc.	Aug. 5, "	(47)	0	0	0	0
XI.	Temporary quar	antine only.	Affected, but	not with	Equine Sy	philis.							
XII.	Foley & Seniff.	Wapella, Ill.	French Draft.	Gray.	Affected.	1884–6	377, 378*	July 27, "					
XIII.	"	"	"	Black.	"	"	"	" " "	106	44	$41\frac{1}{2}$	28	61
III.	"	"	"	"	"	"	"						
XIV.	Jos. Fischer.	Clinton, Ill.	"	"	"	1887.	Unknown.	" 19, "					
XV.	"	"								1		0	0
XVI.	"	"	"	Brown.	Apparently Recovered.	Before Importation.	Affected when Imported.	" " "	48	2	$6\frac{1}{4}$	?	?
XVII.	Simpson, Franklin & Co.	"	"	Gray.	Apparently Well.	1887.	Mares from XIV & XV	" " "					
				"	Affected.	1886.	186, 187 §	Aug. 18, "	33	1	3	0	0
XVIII.	Lisenby & McNamara.	Fresno, Cal.	Grade French Draft.		"	"	164 ‖	Not Quarantined.	123	0	0	0	0
				Total Mares.					397	86	$21\frac{2}{3}$	59	$68\frac{2}{3}$

MULE.

	Owner.	P. O. Address.	Description.	Condition at Date of Quarantine.	When Exposed.	To What Mare.	Exposed.	Affected.	Dead or Killed since Quarantine.
XIX.	Harrold & Culbertson.	Wapella, Ill.	Black Gelding.	Affected.	1886.	Harrold & Culbertson's.	1	1	1
	Total Stallions						17	14	12
	Total Animals						415	101	72

REMARKS.—I. Died Sept. 16th, 1887. II, III–VI, VII. Killed Oct. 19th, 1887. VIII. Died July 28th, 1887. IX. Castrated 1888. X. Released from Quarantine March, 1888. XII and XIII. Killed Sept. 20th, 1887. XIV, XV. In Quarantine. XVI. Died 1887, from the effects of castration. XVII. Killed Nov. 30th, 1887. XVIII. Last heard from at Fresno, California; still affected, and under no restrictions.

* See foregoing Report, under Origin in De Witt Co. † Became affected 1886, by being bred to I–VI. ‡ Exposed 1886, but not diseased. § Exposed and diseased autumn 1885 by XII and XIII. ‖ Bred to and diseased by XII and XIV, early in 1886, and bred late in 1886 to XVIII. XVIII probably served no mares after 164.

SNAKE BITE AND ITS ANTIDOTE.—VI.

EXPERIMENTS WITH CROTALUS VENOM AND REPUTED ANTIDOTES, WITH NOTES ON THE SALIVA OF HELODERMA ("GILA MONSTER.")

By H. C. Yarrow, M.D., Curator Dept. Reptiles, U. S. National Museum.

(From Forest and Stream.)

(*Continued from page* 425.)

Dr. R. Harlan, in Tr. Am. Phil. Soc., Philadelphia, 1828, n. s., III., 300, gives an interesting account of various antidotes used in rattlesnake bites. The *Prenanthis serpentaria* of Pursh, called lion's foot, is said to have cured moccasin bites seen by Pursh himself; but these may have been harmless water moccasins. The Assembly of South Carolina purchased from a negro a secret remedy, the man allowing himself to be bitten by a number of snakes, jumping naked into a tub of snakes. He cured himself by swallowing tablespoonful doses of the *Alisma plantago* expressed juice, repeating it until the effects of the poison were counteracted. A number of experiments were tried with a decoction of *Hieraceum venosum*, a secret remedy purchased from itinerant showmen, one of whom allowed snakes to bite him several times. He swallowed a few ounces of a decoction of the root and held the raw neck of the snake over the bite, the head having been cut off. The *Hieraceum venosum* is vulgarly known as hawk's weed, adder's tongue, poor robin's plantain, rattlesnake weed, etc. Man entirely recovered, but venom from same snake killed a pup. Local symptoms existed in man's case. He winds up by stating: "Had I occasion to treat a wound inflicted by a poisonous reptile my faith in the *Hieraceum venosum* as a cure is not such as to induce me to resort to its employment to the exclusion of the less equivocal means of suction, pressure or ligature." He supposed the animals had been so long in captivity as not to have much venom.

With regard to the *Alisma plantago*, it was used in Dr. Horner's case and failed to have the slightest antidotal effect.

In 1873 appeared a curious little book by S. B. Higgins, S. A., honorary member of the Homeopathic Institute of the United

States of Colombia, entitled "Ophidians; zoological arrangement of the different genera, including varieties known in North and South America, the East Indies, South Africa and Australia. Their poisons and all that is known of their nature. Their galls as antidotes to the snake venom. Pathological, toxicological and microscopical facts, together with much interesting matter hitherto not published." The entire *raison d'être* for the work seems to be a desire to prove the correctness of the following corollary of the author: "Every animal poison has its perfect and specific antidote in the gall of the animal or reptile in which that poison is secreted." After mentioning a number of different methods of cure in vogue in South America he states the following, which may be taken as evidence of the charlantanry of the so-called curers: "For the bite of the sierpe (python) [a harmless snake] open a hen alive and put half of it upon the wounded part, binding it fast with a bandage. Diet—the first day of the cure give the patient fowl; when better beef and salt fish may be permitted. Absolutely prohibited—fish, eggs, bananas, aquacates (alligator pear), cheese, anything acid or flatulent. Great care must be taken not to go barefooted, and on no account to step in fowl's excrement (this is mortal), total abstinence from any carnal act; and he must not allow any woman, pregnant or menstruating, to come near him while being cured."

Of his own method of cure he states as follows: "It must always be borne in mind that the gall of a snake has its virtues most fully developed shortly after the skin has been cast and when its poison is most venomous, provided, however, that the reptile has not eaten any food in the meantime, in which case the gall-bladder will be found nearly or quite empty. Many experiments with this subject, combined with alcohol in widely different proportions of each ingredient, have led me to adopt the following, as the method of preparation which has proven itself most efficacious in a great number of cases. Proportion, one drop of pure gall to ten drops of as pure alcohol, or high wines, or spirits of wine, as can be procured. The mixture must be thoroughly shaken and allowed to stand for a couple of days, when a lead-colored sediment will have deposited itself, the supernatant liquid can be poured off carefully into a perfectly clean new vial, using a bit of sponge in the neck of a small funnel to filter it, when it is ready for use. Never mix galls of different species."

Method of Administration.—"For all ordinary cases of bite, five or ten drops of prepared gall (selecting, if possible, that of the kind causing the bite) in half a tumbler of water well mixed, to administer a tablespoonful of the mixture every five, ten, fifteen or twenty minutes, according to the nature of the symptoms, and varying the dose from three to ten drops of gall, according to the age, sex, condition and susceptibility of the patient, will afford entire relief. In fifty cases treated, I have given ten-drop doses of gall in four ounces of water in two cases only, all the others having been cured by five-drop doses, continuing the remedy at more prolonged intervals, as the symptoms of the action of the poison disappear, and in the ten cases cited, where a five-drop dose was given in tablespoonfuls every five minutes without producing relief, the dose was immediately repeated, and entire relief ultimately ensued.

"I invariably make a deep cruciform incision in the wound with a lancet and bathe the limb in water as hot as can be borne, into which I pour a few drops of prepared gall. When the blood flows a bright red (and not before) a small pellet of cotton or sponge, saturated with the gall (prepared) applied to the wound and secured with a bandage will stop the flow of blood, unless a large vein or artery is punctured by the fang; in this case cauterization is necessary."

As a comment upon the method of cure proposed by Higgins the reader is referred to Rep. No. 27 in Rep. Sanit. Meas. in India, fol., London, 1875, VII., 274, entitled, "Experiments at St. Bartholomew's Hospital to test the effect of Mr. Higgins' antidote to snake poison." Present, Dr. Forbes Watson, Dr. Fayrer, Dr. Brunton and Mr. S. B. Higgins. Several experiments were tried, the antidote being administered by Mr. Higgins himself, but in each case it failed to have any antidotal effect. The committee state that the cobra poison used in these experiments was supplied by Dr. Fayrer, and that the antidote was prepared by Mr. Higgins himself from the gall of the *Lomo di machete* snake, ten drops of gall being diluted with one hundred drops of alcohol of ninety-five per cent., and ten drops of this solution being diluted with four fluid ounces of water.

It is intended to conduct a series of experiments with snake gall to verify or disprove those of the persons named.

A few years since, in some parts of the South, great reliance was placed in a certain weed or plant called Jestis weed or Justice weed, so named from a person celebrated as a curer of snake bites. This person, called Isham Justice, resided in 1800 in Sumter District, South Carolina, and was so convinced himself of the efficacy of his remedy that he frequently made the offer to allow snakes to bite him for the sum of one dollar. The plant he used is known to botanists as *Eupatorium linearifolium* of Linnæus and Elliott, although the *Eupatorium hyssopifolium* is also known as Justice's weed, and possesses similar medical properties. The common name of the plant is boneset or wild horehound. Upon what was considered undoubted evidence from respectable citizens, Justice was granted a sum of money by the State Legislature upon his making known the secret of his remedy. A number of cases are reported of the cure of snake bite, using this plant as an antidote, and Mr. Haynesworth, in the *Phil. Med. and Phys. Jour.*, 1808, III., part I., 57, gives a detailed account of nine cases of recovery from rattlesnake bite, in which the weed was employed. It is prepared by boiling a handful of the plant in a quart of new milk down to a pint, and of this a tablespoonful is given every few minutes until the dangerous symptoms are over. It should be mentioned that the South American plants *Aya-pana* and *Vejuco du Guaco*, reputed as antidotal to snake venom, also belong to the genus *Eupatoria*. Some little attention has been given to this reputed antidote, as the writer believes that if it really is of benefit in snake poison, it must be so owing to the analogy of its therapeutic effect with that of jaborandi, both being tonic, diaphoretic, diuretic and laxative.

In 1873 Drs. Fayrer, Brunton and Richards instituted a series of experiments with a view to determining whether continued artificial respiration in cases of snake bite would prolong life, and thereby give the system a chance to eliminate the poison. They were successful in prolonging life, but eventually all the animals died from the venom. It may be worth while to further mention a few popular remedies that have been recommended and used from time to time.

Cazentre, in *Jour. des Conn. Med. Chir.*, Paris, 1850, 182, recommends cedron, the seeds, if in powder, three or four grains bruised and put in a teaspoonful of brandy or alcohol and swallowed, powder put on wound also. Natives chew it up and swallow. Viand-Grand-Marais in the *Rev. Med. Franç. et Etrang.*, Paris, 1874, I., 362, recommends the same substance, giving statements of cases cured. He also strongly commends the guaco.

The liquor potassa cure has met with some degree of favor, but the evidence is conflicting, as the following notes will show:

Dr. J. Shortt, in *Med. Times and Gaz.*, London, 1873, II., 215, reports a case in which he gave to a man bitten by a venomous snake, *Bungarus arcuatus*, in the first forty-eight hours 72 ounces of brandy and 4½ ounces of liquor potassa by the mouth; 14 ounces of brandy, 3½ ounces of liquor potassa by enemata, 4 ounces in a bath. Gave 20 minims in 1 ounce of brandy every twenty minutes, wound scarified and alkaline bath given. Bitten May 16; got well May 27. Dr. Shortt claims that this is the third case of snake bite saved by the potash treatment. H. Esmond White reports a case, page 413 of same journal, in which potassa treatment with brandy failed, death occurring in one hour and twenty-five minutes.

Dr. E. B. Shapleigh reports a case in the *Amer. Jour. Med. Sci.*, Philadelphia, April, 1869, n. s., 392, in which incisions were made in vicinity of injury. Brandy was administered freely and caustic potassa applied locally, but the patient died in forty minutes.

A host of other substances have been recommended, such as carbolic acid, olive oil, viper's fat, to say nothing of scores of plants and roots, but space will not permit of a discussion of these at this time.

EXPERIMENTS WITH EXTRACTINE PANCREATINE.

De Lacerda announced his opinion that the injection of pancreatine into the tissues would produce the same effect as venom, and the experiments of others seeming to confirm this theory, notably those of Béchamp and Baltus in *Compt. Rend. Acad. Sci.*, Paris, February and March, 1880, which were as follows: "Injected into femoral of dog three grams of pancreatine at 9 A. M., died at 5 P. M. Another case: Bloody fæces, vomiting, emission of urine; lived ten days. Some got well." The conclusions of Béchamp and Baltus are that the intra-vascular injection of pure pancreatine produces functional symptoms of great gravity, and produces death if the injected material is about 0. gr., 15 par kilogrammes of the weight of the animal. Digestion seems to diminish the toxic effects of the pancreatine. Injected pancreatine is only partly eliminated by the kidneys, and when found is unaltered in character.

In view of these facts it was determined to try the effect of pancreatine on fowls. Through the courtesy of Messrs. Fairchild Bros. and Foster, of New York city, the writer was furnished with a remarkably pure sample of the *extractum pancreatis.* This was used in solution with distilled water in the following proportion: One-half dram of *extractum pancreatis* to one-half fluid ounce of distilled water.

Nov. 4, 1887.—12:40 P. M.—Injected black pigeon with 25 minims of pancreatis solution in right thigh. Bird commenced to droop at once, feathers ruffled, whether from fright or injury by hypodermic needle uncertain.

2:30 P. M.—Bird seems better.

Nov. 5.—Pigeon in normal condition, eating heartily.

Nov. 6 and 7.—Bird entirely well.

12:29 P. M.—Injected hen No. 2 with 75 minims of solution of extract pancreatis (½ dram to one ounce of water) in right thigh.

12:35 P. M.—Respiration much quickened, mouth gaping.

1:30 P. M.—Fowl eating corn, but seemed inclined to lie down. Respiration still rather fast and mouth gaping, though not so much as at first.

3 P. M.—Fowl in about the same condition as at 1:30.

Nov. 9.—Hen seems to be as healthy as ever, and has a good appetite.

The next experiment, as will be seen from the notes, was really a very severe test, and would seem to indicate that pancreatine, if poisonous, must be very much feebler in action than snake venom.

Nov. 10.—1 P. M.—Injected in both legs and breast of fowl 25 minims of solution of extract pancreatis (½ dram to ½ ounces distilled water) in each part.

1:05 P. M.—Fowl uneasy and breathing labored, inclined to lie down.

2:30 P. M.—Fowl seems to have lost use of legs; breathing fast with mouth open.

Nov. 11.—11 A. M.—Fowl not able to stand, but sits down with wings outstretched. Respiration labored. Defecates freely.

2:30 P. M.—Fowl in about the same condition as this morning. Has eaten a small quantity of corn.

Nov. 12.—11 A. M.—Fowl unable to stand; eats lying down; defecates freely.

2:30 P. M.—Fowl in same condition.

Nov. 13.—Fowl in same condition. Paralysis of hind part of body, unable to stand without leaning against something. Loss of power in muscles of the rectum.

Nov. 14.—Same condition.

Nov. 15.—Same condition.

Nov. 16.—Fowl a little stronger in her legs. Was taken from the cage and tied with a cord so as to allow of more liberty.

Nov. 17.—Fowl a good deal stronger than yesterday.

Nov. 18.—Chicken can stand on its legs, but puts one before the other to keep from losing its balance while eating.

Nov. 21.—Chicken very nearly recovered; can use its legs almost normally. Eats well.

Nov. 25.—Entirely well.

Several other experiments were tried with *extractum pancreatis*, but without definite result.

Those who have read de Lacerda's work on serpent venom will notice the similarity of symptoms in his cases treated with pancreatine and our own, except that in no case did we lose a single subject, while several of his perished.

EXPERIMENTS WITH CROTALUS VENOM IN SNAKES AND LIZARDS.

Fontana, in his celebrated work on poisons, states as a law that the venom of a serpent is not a poison for itself or for other species, whether harmless or otherwise, and a few interesting experiments have been tried with a view to determine the question, particularly as a mass of conflicting evidence exists. Weir Mitchell, in his early work, was convinced that the poison of *Crotalus*, when injected hypodermically into the same species, could kill, but in his last volume he states this is not the case. Fayrer does not believe that the poison of cobra is poisonous to itself, while Vincent Richards holds an opposite view. Dr. J. Dormet publishes in *Nature*, London, 1883–4, XXIX., p. 504, an account of a black snake of Australia, which, being held forcibly and provoked, turned and bit itself just behind the head, death taking place in one minute. Our experiments show that *Crotalus* venom is not poisonous to rattlesnakes, eutænias (garter snakes) or lizards. The first experiment was upon *Eutœnia sirtalis*, the common garter snake.

Oct. 28.—12:15 P. M.—Injected two drops of glycerine venom and three drops of water into muscular tissue of belly of *Eutœnia.*

3 P. M.—Snake in as good condition as before injection.

Oct. 29.—Snake all right.

12:20 P. M.—Injected three drops of glycerine venom and three drops of water into muscular tissue of belly of *Crotalus.*

3 P. M.—Snake as lively as ever and shows no effect whatever of the venom.

Oct. 30.—Snake all right.

12:30 P. M.—Injected five minims of venom solution and five minims of water into same *Eutœnia* used before. No result. Injected ten minims into small *Crotalus*, no result having been obtained by five minims.

Oct. 31.—No result.

Allowed large vigorous *Crotalus* to strike *Eutœnia* (the same one used before) twice in muscles of the back.

Nov. 1.—No result.

Nov. 4.—No result.

Nov. 8.—12 M.—The *Eutænia* which had been struck before was again struck by an active rattler, which held on well.

1:30 P. M.—No result.

3 P. M.—No result.

Nov. 9.—No result.

Dec. 12.—12:05 P. M.—Injected five minims of rattlesnake venom solution in ten drops of water, into muscular tissue of back of *Heloderma* (Gila monster), which had been in confinement for some time, and was not very strong.

Dec. 15.—All right. Injected ten drops more of venom into the right side of the belly of the same *Heloderma.*

Dec. 17.—No result. Injected fifteen drops more of venom into muscles of belly of same *Heloderma.*

Dec. 20.—All right.

Dec. 22.—Injected twenty-five drops of *Crotalus* venom solution into back of another *Heloderma*, followed by twenty-five drops more into flesh of belly. Absolutely no result.

Dec. 23.—Injected twenty-five drops of *Crotalas* venom solution into the back of a small hog nose snake (*Heterodon platyrhinos*) with no result, notwithstanding the reptile was weak and sickly and had been in confinement without food for over four months.

These experiments, so far as they have gone, seem to prove conclusively that Fontana's statement, made as early as 1776, is correct.

(*To be continued.*)

AMERICAN VETERINARY COLLEGE.

HOSPITAL DEPARTMENT.

FOUR CASES OF LARYNGOTOMY. DR. FLEMING'S OPERATION FOR THE CURE OF ROARING.

Reported By W. Tritschler, D.V.S., House Surgeon Amer. Vet. Hospital.

It is with pleasure that we bring to the notice of the readers of the Review the results of three experimental operations performed for the relief or cure of that intractable affection known as roaring.

The operation, as described by Fleming, consists in the removal of the left vocal cord, (that being the one generally supposed to cause the trouble), with that portion of the arytenoid cartilage to which the cord is attached. The animal is cast and placed plumb upon his back, and the head and neck extended in a straight line; the incision, about two inches in length, is made on the median line, involving the thyro-crycoid ligament, the cricoid cartilage and the crico-tracheal ligament; the entire interior of the larynx is thus fully exposed, the wound is dilated by means of the blunt tenaculum, one on either side, the cord is seized with a bull dog forceps or secured with a thread and removed with the curved scissors, together with the lower extremity of the arytenoid cartilage. There is but a slight hemorrhage accruing from the incision through the skin and muscles; the excision of the cord causes but a trifling loss of blood.

The after care of the wound is exceedingly simple, consisting merely of cleanliness, control of the granulations by means of suitable caustics, dressing consisting of a pad of oakum retained by means of a wide bandage. Strange to say, there are no evil after-effects from the operation, no interference with respiration, nor disturbance with deglutition, no inflammation of the mucous membrane.

Case No. 1 was a bay mare, eight years of age; began to roar when first broke to harness, her sire and dam having been roarers. Was operated upon on the 15th of September, cocaine being used at three or four different points about the larynx. When the inside of the larynx was exposed, it was noticed that the left vocal cord was somewhat immobilized, while the one on the right side moved to and fro with every motion of respiration. The wound healed very kindly, and on the 8th of October she was put under the saddle and given a smart gallop as a test and found *to roar just as much as ever.*

Case No. 2 was a bay mare, seven years old, height sixteen hands. Her case was one of about four months standing, coming on slowly and imperceptibly, intermittent at first and slight in character, until it became fully confirmed and chronic; would not give evidence of it unless driven at a high rate of speed, but when once established it was very evident even at a moderate jog. Operated on the 22d of September, cocaine being used locally. On exposing the larynx, the left cord was found to be entirely motionless, the right one perfectly normal in function, this fact leading us to suppose that the case was one of a favorable nature. By the 15th of October the wound had entirely healed, leaving but a very small cicatrix. Being put to the test under the saddle on sharp trot for about a quarter of a mile, she *emitted just as much of a sound as before the operation.*

Case No. 3 was a bay mare, age 18 years, a dissecting subject, not a roarer, but experimented upon so as to see afrerwards what changes will take place in the larynx. Cast on the 11th of September, the manipulations being the same as the other two cases. Wound had closed completely by the 9th of October. Destroyed on the 20th of October. The larynx being examined, disclosed that the wound created in removing the cord had healed kindly and presented a perfectly normal appearance; the incision through the cricoid cartilage was completely closed, but from its inner surface exuberant granulations were observed, that projected directly into the interior of the larynx, which fact may explain why the two preceding cases proved unsatisfactory.

The above cases although proving failures, flat failures, must not lead to final deductions as to the value of the operation. It certainly is worthy of a more extended trial, if for no other reason than its extreme simplicity and destitution of all danger.

Case No. 4 was another case of laryngotomy, another failure. A chestnut gelding, four years of age, roaring upon the least exertion, dating from an acute attack of laryngitis in the fall of '87. Reluctantly operated upon at the earnest solicitation of the owner on the 29th of November, and put to the test on the 14th of December, when he was found to be as badly off as ever.

The above cases, although proving failures, flat failures, must not lead to final deductions as to the value of the operation; it certainly is worthy of a more extensive trial, if for no other reason than its extreme simplicity and destitution of all danger. Gunther, a German veterinarian, was the first to perform the operation in 1834, and its lethargic disuse since that time, until recently revived by Fleming, should not be accepted as conclusive evidence of its poor merit; although no one has given the pathology of roaring any consideration whatever will think lightly of diagnosing the exact seat of the affection, whether it is located in the trachea, the larynx or the nasal chambers, and if so, what the exact cause is. If roaring is due to paralysis of the vocal cord, right or left, or to depression of the arytenoid cartilage, this operation will, if not entirely removing it, at least relieve it; but, if the adventitious sound is due to a constriction at any part of the trachea, an ossification of the cartilages of the larynx, the presence of a polypus in the nose, or the thickening of the mucous membrane at any part of the respiratory track, it must necessarily result in failure, and unless our means of diagnosis become more perfect than they now are, it is to be feared that the operation will meet with little favor.

REPORTS OF CASES.

INTESTINAL CALCULI.

By C. H. Peabody, D.V.S.

On August 25th was called to see a bay mare about twelve years old which, until this time, had been in good health.

History of the case.—The mare had been uneasy the day before, had refused her feed, had had no movement of the bowels for twenty-four hours at least.

Symptoms.—Found pulse 40; respiration, 14; temperature, 101°; quite uneasy, lying down and getting up and looking at her side; on rectal examination found it empty; diagnosis, impaction of intestines; prognosis favorable.

Treatment.—Administered a good cathartic, followed with salines, oils and opiates as required, with enemas of hot water. The symptoms remained about the same until the seventh day, when there was a good free evacuation of the bowels.

September 1. Pulse, 36; respiration, 12; temperature, $99\frac{1}{5}$°; fed light; gave a little walk around the barn. The mare continued to improve apparently, so much so that on September 3d she was walked about one-eighth of a mile; on September 5th she was walked about one-half mile and on the 6th about a mile, apparently well.

September 7th she was taken with quite severe colic pains, and from that time the pains continued more or less severe until death.

September 7. No passage and none until she died, which occured on September 12th.

The treatment was catharitcs, salines with opiates.

September 10, the pulse was 40; respiration, 14; temperature, 101°.

September 11, 9:30 A. M.; pulse, 56; respiration, 18; temperature, 102⅗°. 6:30 P. M.: pulse, 60; respiration, 20; temperature, 104⅖°.

September 12, 9:30 A. M.: pulse, 68; respiration, 24; temperature, 104⅗°. 6:30 P. M.: pulse, 84; respiration, 60; temperature, 108°.

The mare died at 7:15 P. M., September 12th. The autopsy was made September 13th, about sixteen hours after death.

Three yards from the anus, extending forward, found a calculi measuring 7½ inches long by 16 inches in circumference and weighing 6½ pounds; 4 inches anterior thereto, there was a rupture in the intestine 3½ inches long.

SCROTAL HERNIA.

By The Same.

On August 11th was called to the stock farm of Mr. Earl H. Potter, to see the standard bred stallion Arrapahoe, 7,063, by Lord Russel, full brother to Maud S. On my arrival I found my friend Dr. Burt there, and the stallion with a scrotal hernia on the right side. He had had a drench of chloral and was not very uneasy.

The side lines were put on and the animal cast and rolled well on his back; by inserting my hand into the rectum and by light traction on the portion of the intestine where it passed through the abdominal ring, and with the other using slight pressure and kneeding motion, with the assistance of Dr. Burt making downward traction on the testicle, the intestine in about three minutes slipped back into the abdominal cavity with a gurgling sound, and the animal gave a sigh of relief; he was let up apparently all right. I would say that the hernia occurred about 11:30 A. M., and it was about 3:30 when it was reduced.

The animal was placed under opium, belladonna and whiskey; was quite comfortable with no signs of pain.

August 12. Temperature, 102°; respiration, 18; pulse, 48; otherwise doing well. Saw him until the 15th, when he was in so good a condition that we left him. All went well until September 3, when there was a re-occurrence of the hernia, which was replaced as before. The animal being a very high bred, the owner was anxious to keep him a stallion if possible.

The next day, September 4, in the morning, he appeared all right. At 7:15 P. M. he was again taken, and my friend Dr. Burt was sent for.

I got to the farm at 11:30 P. M. when the animal was cast, and in about five minutes the hernia reduced and the animal let up with the understanding to operate next day. September 5, at 9:30 A. M., the colt was again cast, rolled well on his back and Dr. Burt inserted his arm well up in the rectum and completely covered the abdominal opening. We operated by the covered operation, drawing the cord down as far as possible; we used a good stout caustic clamp on both testicles as far up as possible and let the animal up, placed him under opium and belladonna and hypodermic injections of morphine as the occasion required, with stimulants and whiskey.

The pulse varied from 40 to 60, temperature from 100° to 103°; respiration from 12 to 24 for four days, when there was a steady decrease of unfavorable symptoms; on the 15th the clamp on the right side sloughed off, and on September 22, the other one came off and I discharged the animal as well.

ELATERIUM IN HYDROTHORAX.

By P. Peters, V.S.

Elaterium is the substance deposited from the juice of the fruit of the Momordica Elaterium, or squirting cucumber. It has a high reputation as a hydragogue cathartic in human practice. This action does not appear to be prominent in at least some of the lower animals. Viborg asserts that a horse was unaffected by a pound of the elaterium fruit. H. C. Wood gave one and even two grains of a presumably active elaterium to a dog without producing very obvious results, whereas it is not deemed safe in human practice to begin with a larger dose than one-sixth of a grain.

Elaterium has been considered especially valuable in uræmia because it produces an elimination of the urea in the stools. Now, since it has been proved on good authority that uræmic convulsions are *not* due to urea, the bottom is knocked out of that theory. In like manner E. is recommended for general dropsy, because it is a hydragogue cathartic. But this latter theory is not in harmony with my observations of its action on the horse, for I have failed to produce catharsis, but I have never failed in causing reabsorption of dropsical effusions by its use; in fact I have never had occasion to resort to the operation of paracenthesis thoracis since its employment. I have only thus far used E. to remove pleuritic effusions. In typical cases of pleurisy I control the heart's action by the third extract of digitalis. On the fourth or fifth day percussion will reveal the presence of effusions. The acute symptoms will have lessened, but the effusions will interfere with the cardiac and pulmonary functions. Now is the time to exhibit elaterium. The following is a favorite prescription of mine:

℞ Elaterii, gr. xx.
Extr. Bellad, ℥ 1.
Glycerini, q s.
M ft. Boli No. II.
S One every day.

As a rule the effusion will entirely disappear within forty-eight hours, and convalescence progress quickly.

A PROPOSED BILL FOR A PATHO-BIOLOGICAL LABORATORY.

TO BE PRESENTED TO CONGRESS FOR THE ENCOURAGEMENT OF SCIENTIFIC RESEARCH—CONTAGIOUS, INFECTIOUS AND MALARIAL DISEASES TO BE ESPECIALLY STUDIED—FOR THE PROTECTION OF THE HEALTH OF THE PEOPLE AND OF THE LIVE STOCK INTERESTS OF THE PEOPLE—A MEASURE WHICH OUGHT TO RECEIVE SUPPORT.

A BILL for the establishment of a national patho-biological laboratory, for study and investigation into the causes of contagious and infectious diseases which threaten and endanger the health of the people and the live stock interests of the country.

Be it enacted by the Senate and the House of Representatives of the United States of America, in Congress assembled:

That for the purpose of the better protection of the health of the people of the United States from the ravages of contagious, infectious and malarial diseases, and for the preservation and protection of the great live stock interests of the country from the decimating devastations of pestiferous diseases of a similar nature, and for the more complete elucidation of the relation existing between many diseases of our domestic animals, and the life and health of human beings whose business calls them into intimate relations with them, and of the welfare of the public as consumers of animal food or animal products, there shall be established at Washington, in the District of Columbia, and the United States of America, a laboratory for the purpose of making a continuous and scientific study into the causes and nature of the classes of disease herein mentioned, and of all subjects connected therewith, bearing either upon the public health or animal economies of the country, and that said laboratory be known as the patho-biological laboratory of the United States of America.

It is further enacted that the general supervision and control of said patho-biological laboratory shall be in the hands of the Surgeon-General of the marine hospital and quarantine service of the government of the United States; that the said Surgeon-General shall, at the completion of the buildings and grounds herein provided for, appoint two distinct and independent directors, who shall be the head of two distinct and independent departments of investigation, and who shall be known respectively as the director of the humano-patho-biological, and the zoo-patho-biological institutes of the patho-biological laboratory of the United States. The directors of the institutes named above shall be competent and skilled patho-bacteriologists, the one in human, the other in animal diseases, and shall, respectively, be graduates from a thoroughly organized and world accredited medical and veterinary school, college, or department of some university, and shall have both been engaged in and have published in some accredited journal or report investigations which have gained them each reputation in the medical-scientific world, and have demonstrated their fitness for the positions and responsibilities herein provided for.

The salaries of the directors of the institutions above mentioned shall be five thousand dollars ($5,000) per annum.

The said Surgeon-General, with and by the advice and consent of the directors of the institutes named, ahall also appoint an assistant to each at a salary of twenty-five hundred dollars ($2,500) per annum, respectively; the one assistant to be a creditably graduated doctor of medicine, and the other a doctor of veterinary medicine, both of whom shall be citizens of the United States and shall have done creditable work in the field of patho-bacteriological investigation.

The directors of the institute named shall appoint, with and by the consent of the Surgeon-General of the United States marine hospital service, such other assistants and servants as shall be necessary to carry on the work herein provided for.

The said Surgeon-General shall also appoint to each of the institutes named a competent chemist, each of whom shall be fully equal to conducting investigations in search of the true character and value of the ptomaines or toxins produced in the evolution of micro-organismal life, and who shall have previously distinguished themselves in this line of research. The salary of said chemists shall be five thousand dollars each ($5,000) per annum. The Surgeon-General aforesaid is also authorized to employ such assistants and servants for the aid of the said chemists as shall be necessary to the faithful and thorough conducting of their investigations.

The salaries of the persons herein named in connection with the work of patho-biological laboratory of the United States shall be paid out of the funds in the treasury upon warrants drawn by the said Surgeon-General, countersigned by the Secretary of the Treasury Department of the United States. It is further provided that in order to stimulate and encourage original research into the cause and nature of the classes of disease herein mentioned, that the said Surgeon-General is hereby authorized to offer the free use of such rooms and appurtenances as shall be provided therefor in the said laboratory, to a limited number of such citizens of the United States as may volunteer their services, at their own expense, and who are known to the said Surgeon-General to have been creditable graduates of an honorable veterinary or medical school or college, and to have distinguished themselves by original research in the lines of work herein provided for, the necessary room, materials and appliances to be supplied by the officials of said laboratory. Said voluntary workers shall agree, in writing, with the said Surgeon-General to accept two young medical or veterinary students of American schools or colleges, to be selected by the said Surgeon-General, as assistants and students, and to instruct them in the lines of work they may be engaged upon. Such students must be at their own expense, except as to the instruments and implements necessary to work with. The said volunteer investigators must furthermore agree, in writing, to continue any given series of investigation until completed, to the satisfaction of the said Surgeon-General, unless otherwise excused thereby, and must further agree to engage upon any special line of research that may be deemed necessary by the said Surgeon-General, or the director of the institute, of this laboratory, to which they may have been detailed. They must further agree that all the results and benefits of any work performed by them in any department of this laboratory shall become the property of the Government of the United States of America, and be reported in a full and exact manner for publication in the reports of the same. With and by the consent of the director of the institute of this laboratory, in which such a volunteer may be working, and with the written agreement of the Surgeon-General aforesaid, such volunteer investigators may have the privilege of publishing advance reports of their work in the medical or scientific journals of this country. It is further provided that the sum of five hundered and fifty thousand ($550,000) be hereby appropriated, from funds in the treasury of the United States, for the purpose of purchasing the necessary land in the city of Washington, and for grading und fencing the same, and for the erection of the necessary buildings thereon, and the equipment of the same, in accordance with the uses herein provided for, to wit:

For the purchase, grading and fencing the land, one hundred and fifty thousand dollars ($150,000). To a laboratory building, two hundred thousand dollars ($200,000).

The necessary apparatus and equipment of the same, one hundred thousand dollars ($100,000). For stables, pens, cages, etc., and residences for grooms and servants, one hundred thousand dollars ($100,000).

It is further provided that the Secretary of the Treasury of the United States, the Secretary of Agriculture, and the Surgeon General of the marine hospital service shall constitute the board of trustees and building and purchasing committee of the pathobiological laboratory of the United States, and that the persons named are hereby empowered to purchase a location, secure the necessary plans and build and equip the said institution in the manner herein provided for, and to draw the necessary warrants for the payment of the same in accordance with the letter of this act.

CORRESPONDENCE.

CASTRATION NOT VETERINARY SURGERY.

Editor American Veterinary Review:

An action was taken at the meeting of this society held last evening relative to a notice in the last issue of the Review. This notice stated a case of prosecution in New York State of an unregistered practitioner who was sued for castrating a horse, and that the ruling of the judge was that castration *was not* veterinary surgery.

A motion was carried to the effect that it be the opinion of the Long Island Veterinary Society that the ruling by a judge that *castration was not veterinary surgery was unjustifiable and wrong*, and that the Secretary be requested to place himself in communication with the editor of the AMERICAN VETERINARY REVIEW, requesting the name of the prosecuting veterinarian, so that the society may place themselves in communication with the party, expressing hearty commendation of his action in maintaining the law. Trusting you will favor me with the veterinarian's name, I remain

Yours very respectfully,
FRANK J. FANSHEW, D.V.S., *Secretary.*

CASTRATION NOT VETERINARY SURGERY.

BROOKLYN, Nov. 22, 1888.

Editor American Veterinary Review :

In your last issue you call the attention of the profession to the fact that a learned (?) member of the law has lately ruled that castration is not surgery, and so decided against one who was endeavoring to enforce the act relating to the practice of veterinary medicine and surgery in this State. I can't too strongly coincide with the REVIEW in advocating the appeal of the case, and as I know of no organization who has a fund provided for the prosecution of persons violating the act supposed to be in force in this State, I would, therefore, respectfully suggest that the REVIEW at once proceed to solicit a subscription for the purpose of forming a fund to appeal the case in question. I have personally brought the case before a well-known lawyer, who characterized the ruling of the court as absurd, and if such a legal farce as this is to go unchallenged, there is no use having any law, and what we have in this State certainly becomes a dead letter.

W. H. PENDRY.

CALIFORNIA STATE VETERINARY SOCIETY.

OAKLAND, CAL., Nov. 17, 1888.

Editor American Veterinary Review :

In the November number of the REVIEW appears an artiticle on the organization and difficulties of the California State Veterinary Society.

While I am not a member of the above society, the article in question reflects on the profession in general in this State, therefore I deem it my duty on the part of a non-member of this society to explain the condition of affairs in California. While I have not become grey or bald-headed practicing my profession, yet as a graduate of an honored institution and a man of ordinary conception, I do not think the article in question is a very kind reflection on the profession here. Thr inducements to join this socicty are as follows:

This society was not legally organized, nor does its constitution and by-laws protect the professional man in the least, admitting to membership all manner of non-professional men. Although there may be many worthy men among them, I tell you, Mr. Editor, it is not prudent at this enlightened age to foster quackery. No professional man should affiliate professionally with a quack, much more protect and consult with them. Therefore, what step in elevating our profession can such a society take? What benefit can a professional man derive from such affiliations? What do intelligent people think of such an organization? Quackery and science are inconsistent with each other, consequently no such society can expect success under its present constitution.

T. Carpenter, V.S.

REVIEW PRIZE.

Editor Review:

I beg you will permit me, a young member of the profession, to express my views regarding the award of the Review prize. I am in no wise interested in either of the contestants, in fact, do not know who wrote the article on parturient apoplexy, but I do feel an interest in the profession to which I belong, and believe that the award made by your prize committee is a reflection upon the intelligence of every member of the profession. While I am willing to concede that a hundred dollars is but a small monetary consideration for the labor incident upon the original investigation of any subject pertaining to veterinary science, I am not willing that the world shall be told without protest that a hundred dollars has been given by the Review for a few rambling notes, written in bad English, on a subject which the author concedes he knows nothing about. If the disease is a new one to the author of the successful paper, he must have had a very limited experience in cattle practice, and an equally small acquaintance with the current literature on cattle disease. I have no quarrel with the author in question, for he has simply been fortunate beyond his deserts, but I believe that the committee that made the award failed to appreciate the fact that the donor of the prize was entitled to something of value for his money, and that the profession had a right to expect that the successful paper should be at least an intelligent exposition of some scientific question pertaining to veterinary medicine. As an humble member of the profession, I trust our intelligence will not be measured by the standard raised by your prize committee.

Yours very truly,
A. N. Easterner.

THERAPEUTIC OF PARTURIENT APOPLEXY.

Trevose, Pa., Nov. 10, 1888.

Editor American Veterinary Review:

In reading the article by Dr. John Faust on therapeutic review of parturient apoplexy, I was struck by the importance he placed on the homœopathic preparation of tincture aconite and belladonna in the cure of that disease. Now the treatment is old. Any homœopathic veterinary book has the treatment he offers in it. I have used the treatment as he directs, with a loss of about three out of ten cases, but have as good luck from our U. S. P. preparations. Now I think the success of the treatment lies in the fifteen minute doses, as any one knows if the owner has to give medicine every fifteen minutes he can scarcely leave the animal. And I think it absolutely necessary that the cow is propped up on brisket, and not allowed to lie on side, and will not make any difference what preparation of aconite he uses, if he allows her to lie on her side. Now again, suppose he is not called in the first stages of the disease, and finds the cow comatose and scarcely any pulse and cold. Does he want us to give thirty drops of aconite every half hour? I know we would have better success in substituting aromatic spt. ammonia in this case. With this exception and the addition of injections of carbolized warm water into uterus, I think the treatment much better than large doses of any kind of medicine.

W. H. Ridge, V.M.D.

OBITUARY NOTICE.

Professor R. V. Tuson, Professor of Chemistry in the Royal Veterinary College, died on the 31st of October last, in the fifty-seventh year of his age. His death is equally a loss to the veterinary profession at large in England, and to the institution with which he had been connected for twenty-eight years. To American veterinarians Professor Tuson was chiefly known through his valuable work on the chemical and medicinal properties of agents used in veterinary practice, though this was not his only contribution to veterinary literature. The profession is indebted to him for many other papers of value and interest, which appeared in the columns of the *Veterinarian*, of which he was an assistant editor. His principal literary labor, however, was the editing of "Cooley's Encyclopedia of Practical Receipts."

SOCIETY MEETINGS.

CONNECTICUT VETERINARY MEDICAL ASSOCIATION.

A regular meeting of the above Association was held at the Tremont House, New Haven, on Tuesday, September 4th, at 7:30 in the evening.

The following gentlemen were present: Messrs. W. J. Sullivan, E. C. Ross, Nathan Tibbals, E. A. McLellan, George Bridges, Andrew Hyde, Frederick Lamberton and Thomas Bland.

A. C. Hexhamer, D.V.S., of Stamford, was unanimously elected to membership. H. C. Balzer, a graduate of the Pennsylvania Veterinary College, was proposed for membership by Thomas Bland, and H. Whitney, graduate of the Harvard Veterinary School, by E. C. Ross.

It was proposed that we make another attempt to procure legislation for the regulation of veterinary practice in the State. The subject will be thoroughly discussed at next meeting and a suitable bill drafted.

George Bridges read a paper on parturient apoplexy, which he kindly consented to have published in the REVIEW. In the discussion which followed the reading of the paper, some of the members spoke of the treatment which had in their experiences seemed to have yielded the best results.

Mr. Hyde does not believe in depletion, but gives alcohol, belladonna and digitalis and uses stimulating applications to the poll and spine. Mr. Ross believes in depletion in some instances, and whiskey and ammonia internally and stimulation to poll and spine. Mr. McLellan stimulants and the wet pack. Mr. Lamberton, drastics, mag. sulph. and ol. croton. belladonna; stimulates poll and spine. Mr. Tibbals, physic, ammonia, ether, nitre and stimulants to poll and spine. W. J. Sullivan, depletion, eserine hypodermically, subsequently nux vomica and continuous stream cold water to poll. Thomas Bland, wash uterus with solution carbolic acid or chloride sodium; give carbonate ammonia in capsules; alcohol, atropia sulph. hypodermically; and strong liniments to poll and spine.

The essayist received a hearty vote of thanks. Mr. Lamberton will read a paper on navicular disease at the next meeting, which will be held in New Haven on Tuesday, December 4th.

THOMAS BLAND, *Secretary.*

THE MASSACHUSETTS VETERINARY ASSOCIATION.

The regular monthly meeting of this Association was held at the rooms of the Boston Medical Library Association, Wednesday evening, September 26th. President J. F. Winchester presided, and there were present Doctors Blackwood, Lee, Marshall, Peters, Stickney, and Howard, of Boston, Bunker of Newton, Sherman of Lowell, and Winchester of Lawrence.

The minutes of the previous meeting held last June were read, and by vote accepted as read.

A communication from K. Winslow, M.D.V., tendering his resignation as a member was read, and the Secretary was instructed to write him that it would be accepted on payment of any fees due the Association. Dr. Howard reported on the cost of printing pamphlets containing the revised constitution, by-laws and ethics, and on motion of Dr. Peters it was voted to defer further action in regard to same until some future meeting.

The Treasurer called attention to the fact that owing to the delinquency of certain members in payment of fees, the funds at his command were very small, and until fees were paid no great expense could be borne by the treasury. Some discussion in regard to delinquents took place, and it was decided that their pleasure be awaited for a time before exercising the authority of the constitution in regard to them. Some discussion in regard to legislation took place, but as there is a committee in existence to which the matter is referred, no action was taken; Dr. Peters suggested that if the committee did no active work or deemed it not advisable to, it should nevertheless keep informed as to what is being done by other parties.

Wm. Ferguson, M.R.C.V.S., of Cambridge, candidate for membership, read a paper on "Tuberculosis," which was listened to with much interest by all present.

The author was fortunate in the selection of a subject than which there is none of more importance to veterinarians at the present time, and following the reading of the paper an interesting discussion of the subject took place.

Dr. Stickney said there was now no doubt of the transmissibility of the disease from animals to man and vice versa; many physicians cannot appreciate the disease as we see it because they have not the facilities for observing it post mortem that we have. They only see it post mortem in an aggravated putrefactive form, and consequently a small tubercle is not enough for them; when we show them the disease in its infancy, the glands perhaps involved only, they do not recognize it because the lungs are not affected. Now under favorable circumstances, cannot the disease be transmitted from a tubercle the size of a pea as well as from one larger? We never shall get rid of this disease until it is recognized that such is the case. In time this will be as important a factor in cattle raising West as is contagious pleuro-pneumonia.

Dr. Howard related the action taken on this subject by the U. S. Veterinary Medical Association at its meeting the week previous, and Dr. Winchester suggested that if the veterinarians in this State would collect the facts in regard to the disease here it would be something interesting in the way of statistics to present to the meeting of the U. S. Association in Boston next March. He said that of many herds examined by himself there were only two in which he had not found tuberculosis affecting from ten to thirty per cent. of the animals. On motion of Dr. Peters it was voted that the Secretary cast one vote on the admission of Dr. Ferguson to membership, and a unanimous vote of thanks was subsequently tendered him as essayist.

Meeting adjourned to fourth Wednesday in October.

L. H. Howard, *Secretary.*

NEW JERSEY STATE VETERINARY MEDICAL ASSOCIATION.

Regular meeting of the New Jersey State Veterinary Medical Association was held at the American Home, Trenton, Thursday December 13, at 11 A. M.

The President, Dr. Dimond, called meeting to order. Twenty-eight members responded to roll call.

The by-laws being suspended, Dr. J. Gerth, Jr., of Newark, was regularly elected an active member, he having previously been an honorary member.

On motion, Dr. Gerth was duly elected Chairman of the Board of Censors, *pro tem*, in the absence of Dr. Miller. Meeting then adjourned to allow Censors to confer.

On resuming business the Board of Censors made favorable report on the application of N. W. Curry, D.V.S., for active membership, and recommended that the application of C. A. Fithian be laid over till the next regular meeting, in order to allow him to come before the board for examination: also recommended that the communication of I. A. Krowl, D.V.S., of Passaic, be placed on file.

The reading of papers being next in order, Dr. W. H. Mook, of Metuchen, read an essay on "Contagious Pleuro Pneumonia." He spoke of the history of this disease in Europe, its introduction into the United States, then entered minutely into the etiology and pathology, ending by telling of the difficulties which were experienced in exterminating it from the State of New Jersey.

Quite a lengthy discussion followed, in which Drs. Gerth of Newark, Gill of Jersey City, Hawk of Newark, Dustau of Morristown, Leatherman of Clinton and the President, Dr. Dimond, participated. Dr. Mook closed discussion in a very able manner.

At 2:30 P. M. recess was taken for dinner.

After convening, a number of letters were read by Secretary and ordered placed on file.

It was regularly moved and seconded that the name of F. S. Billings be stricken from the roll of honorable membership.

Dr. Gerth was appointed essayist for the next meeting, and promised to read a paper on "Hog Cholera."

The meeting then adjourned to meet again at Trenton, on the second Thursday in April, 1889.

W. H. Cooper, *Secretary.*

NATIONAL VETERINARY SANITARY ASSOCIATION.

The National Veterinary Sanitary Association, a representative body of delegates from sanitary boards and veterinary associations throughout the United States, held its fourth annual meeting at the Grand Pacific Hotel on Tuesday, Nov. 20, Dr. A. A. Holcombe, of Wyoming, presiding. About twenty delegates were present.

Papers upon Texas fever were read by Dr. Paul Paquin, of Missouri, and Dr. Lamb, the State Veterinarian of Nebraska. Drs. A. A. Holcombe, Wyoming; Herbert Holloway, Montana, and Dr. Lamb, Denver, were appointed to consider the question of Texas fever, and to recommend a quarantine line in Texas from south of which cattle should not be brought north.

The committee proposed, and the report was adopted, that the line should start at the Red River, on the line between Wilbarger and Wichita counties, thence south to the southeast corner of Baylor county, west to the northeast corner of Haskel county, south to the southeast corner of Jones county, west to the northeast corner of Nolan county, south to the southwest corner of Rummells county, east to the northwest corner of Concha county, south to the southeast corner of Sutton county, west to the northwest corner of Val Verde County, and south to the Rio Grande.

Cattle from the counties lying south of this line will not be admitted to other States and Territories, unless they are seventy-five days north and west of the above line.

Of the States and Territories affected by the quarantining of Texas cattle, Montana, Wyoming, Dakota and Nebraska were represented on the committee which submitted the report by their State or Territorial sanitarians, and agreed to enforce the quarantine laid down. Officers of other States will probably enforce the same quarantine.

ILLINOIS STATE VETERINARY MEDICAL ASSOCIATION.

The Illinois State Veterinary Medical Association held its sixth annual meeting at the Sherman House, Chicago, November 16th and 17th. After the roll call, the President, Dr. W. L. Williams, gave his annual address, in which he noted a marked increase in membership as well as in interest and fellowship.

The Association enrolls at present about sixty per cent. of the qualified practitioners of Illinois.

The election of officers for 1889 resulted as follows:

President, W. L. Williams, Bloomington; Vice-Presidents, J. T. Nathess, Delaware; C. S. Green, Richmond; James McClintock, Galva; Recording Secretary, J. F. Pease, Quincy; Corresponding Secretary, S. S. Baker, Chicago; Treasurer, Jno. Scott, Bloomington; Board of Censors, A. H. Baker, Chicago; J. F. Ryan, Chicago; R. W. Story, Princeton.

The following gentlemen were then elected members of the Association: T. B. Newby, Shelbyville; J. W. Harwood, Bloomington; C. E. Sayer, Chicago; Thos. Hope, Waukegan.

Afternoon session. Meeting called to order at 1:30 with a full attendance.

Dr. McClintock read an account of "An Unusual Sequel in Tracheotomy." The operation had to be repeated on a young filly, when the trachea was found blocked by an hypertrophied condition of the incised edges of the tracheal cartilages. The tumors were excised and a silver plate 4x3½ inches, slightly rolled, inserted.

Two flanges cut in the center of this plate were bent out through the tracheal incision, one clasping the ring above, and one the ring below. The wound healed, imprisoning the silver semi-tube, and the filly is doing well. Discussion followed this paper. Dr, Williams had seen an ossified cartilaginous tumor, but death of the subject prevented a similar operation.

Dr. B. B. Page, of Rockford, then read a paper on "A Peculiar Suppurative Affection of the External Lymphatics of Cattle."

This affection appears in a sporadic or enzoötic form. Fifteen to twenty animals have been seen affected in one herd. Bunches appear on the sides of head and neck and on fore extremities. Deep incision reveals thick creamy pus. Little or no constitutional disturbance occurs.

Treatment not successful with essayist. The symptoms recur. He believes it due to *actinomyces.* Cultivations have been made and inoculation proved successful.

Discussion: Prof. F. S. Billings was called on, and verified the opinion of actinomyces. This is an *invading*, not an *infecting* organism. Its irritation is *local.* Finds access thro' decayed teeth or catarrhal buccal mucous membrane, and reaches pharyngeal lymphatics. "Big jaw" is a variety where the bony structures are invaded. *This* variety is not amenable to treatment, but *iodine* injected into the abscess cavities *will kill* fungus.

Several members had treated the disease by free incision and escharotics and had been successful.

The standing committees were then appointed by the chair.

On motion of the Corresponding Secretary, the names of Drs. Mears and Stimpson were ordered dropped from the roll, the gentlemen having moved from the State.

The Committee on Legislation reported on salient points for a bill to go before the next Legislature. The report was discussed and adopted, and on motion a new committee was appointed to draught and present the bill.

Saturday, Novembr 17th. Meeting called to order at 10 A.M. The Treasurer's report was read and approved, after which the rules were suspended and the following new members admitted: Drs. J. D. Robinson, of Canton; J. Staltman, Waukegan, and H. G. Pyle, Du Quoin.

The case of Dr. E. D. Roberts of Janesville, Wis., was referred to the Board of Censors, and on their recommendation he was admitted to active membership.

Then followed an able paper by Dr. F. Booker, of Carlinville, on "Erysipelas in Horses." This was succeeded by a short paper on the "Uses of Veratrum Viride in veterinary practice," by Prof. R. J. Withers.

In the afternoon the reports of several committees were heard, after which the programme was continued by four articles on Maladie du Coit.

Introduction, on "Physiology of Spinal Cord" (with illustrations), J. F. Pease.

Main article: "Resumé of Dr. Thanhoffer's report to the Austrian Government," Dr. W. L. Williams. The disease is characterized by hyperæmia and extravasations in lumbar cord, followed by tissue degeneration and reabsorbtion with consequent loss of substance in the gray matter, and asymetry of the cord. Tne microscope reveals pigment and amyloid degenerations in the nerve cells, retraction and fission of the nuclei, and loss of substance with globular new formations and wandering cells in the neuroglia. There are marked structural changes in the cutaneous and mucous tissues of the genitals.

Prof. A. H. Baker gave the result of a post mortem held on a diseased mare, held at the ChicagoVeterinary College. The lesions agreed with those seen by Thanhoffer.

Dr. J. Casewell, State Veterinarian, spoke briefly of the means of control. All animals liable to be moved should be destroyed; all exposed should be quarantined nntil safe, and exposed stallions should be isolated or castrated.

There being some time remaining, a paper on osteo-porosis was allowed, by Mr. Anderson, student of the Chicago College.

Votes of thanks were extended to the essayists and to the retiring officers. A special vote of thanks was tendered the re-elected President for his past efficient work.

(It was decided to hold the semi-annual meeting in two sessions, one early in the year *out of* Chicago and the other later, *in* Chicago).

The Association adjourned to meet in Springfield during January next.

The annual banquet given at the Sherman House, was participated in by the students of the Chicago College.

J. F. PEASE, *Recording Secretary.*

NEWS AND SUNDRIES.

SWINE DISEASE IN CERRO GORDO COUNTY.—Under date of October 14th, word was sent from Mason City, Iowa, as follows: "The swine plague which has been infesting this part of the State for the last year is now believed not to be cholera. The

State Veterinarian was petitioned by the trustees to investigate, but in reply stated that his department had been compelled to suspend for lack of funds. Dr. Salmon, chief of the Bureau of Animal Industry of the United States, has been asked to investigate a lung of a pig which has been dead but a few hours. It was examined by a local veterinarian and found to be terribly enlarged, of a clotted blood color, and full of pus."—*National Live Stock Journal.*

TUBERCULOSIS IN GERMANY.—Among 8,252 beeves, 28,178 swine, 23,557 calves, 10,776 sheep and 75 goats killed in the slaughter-houses of Chemnitz in 1887, 422 beeves, 79 swine, 2 sheep and 2 calves were found to be tuberculous. In the same year among 11,227 oxen, 1,656 steers, 1,389 cows, 598 yearlings, 30,477 calves, 18,860 sheep, 3,968 lambs, 63,832 swine and 445 horses,—a total of 132,453 animals,—51 oxen, 45 cows, 8 steers, 3 yearlings and 1 calf, all together 108 animals, were found to be tuberculous. In Bamberg, in the same year, among 4,781 beeves, 49 were tuberculous.—*Duetsche Med. Wochenschrift.*

THE CRIME OF DOCKING HORSES.—In *Our Dumb Animals*, a paper published at Boston, Mass., under the auspices of the Humane Society, the President of the Massachusetts Society for the Prevention of Cruelty to Animals says: The docking of horses is a barbarous and cruel operation, in clear violation of the laws of Massachusetts, and may be punished by $250 fine and a year's imprisonment in jail. Any man who violates this law is a criminal, and any man who aids is a *particeps criminis.* The cruelty is not only in the operation, but, as the tail can never grow, the horse through life thereafter has no protection from flies, mosquitos and other insects that torment. We have obtained in Massachusetts courts already three convictions, and I hereby offer, in behalf of the Massachusetts Society for the Prevention of Cruelty to Animals, $50 for evidence which shall enable us to convict of this cruel and barbarous practice.

A SIMPLE REMEDY AGAINST THE DIPHTHERIA OF FOWLS.—Mr. T. Schuster proposes to paint with a small brush, the beak with a little petroleum and the introducing of a drop of it in each nostril. A single application is generally sufficient, though it is better to apply it for one or two days after.

Malaria in a Dog.—So much has been written and said of late in regard to diseases that animals have in common with man, that I thought the following case might be of interest to some of the profession. Recently I was asked to see a dog, belonging to a lady in a family that I usually attend, and found the following history of symptoms: On Tuesday he was taken, while in the house in the sitting-room, with a violent shaking. After this passed off, he seemed very hot; and towards morning was wet with sweat. During that day he seemed somewhat listless and indifferent to tramps, etc., in which he had previously taken a decided interest. The following day, at 6 P.M., the previous symptoms of shaking, heat, and sweating were repeated, and again on Saturday, and also on Monday he was taken in the same manner; each time one hour sooner. I did not use the thermometer, as I am not familar with the normal temperature of dogs. On the following day—Tuesday—I ordered for him sixteen grains of quinine, four grains every three hours, which he took and retained. The next day there was no return of the fever; but for several days he seemed listless and did not have his customary vigor. So I ordered Fowler's solution, four drops, t.i.d., and within a week he was all right again.—*Medical Record.*

Cruelty to Animals.—The following was sent from Decatur, Ills., last week: "Dr. J. F. Reid, Assistant State Veterinarian, was called to Taylorville again to-day to look after forty-five horses that had been brutally treated at recent Republican and Democratic meetings held at Taylorville. The poor beasts were made to suffer terrible agony by the injection of sulphuric acid while they stood hitched to the racks in different parts of the town. Five of the horses have died, and others will follow. The acid has eaten the flesh from the poor brutes, and in nearly every case irreparable injury was inflicted. One man lost a $1,200 span of bay mares. Efforts are being made to capture the guilty parties. If caught they will probably receive the same treatment they gave the horses."

AMERICAN VETERINARY REVIEW,

FEBRUARY, 1889.

EDITORIAL.

The Triumph of Pasteurism.—Deserving name used by Dr. Fleming—Pasteur Institute opening—its advantages and objects—public money builds it—and keeps it in working trim—it is not a dispensary for rabies patients—it is for investigation of all contagious diseases—it is a national patho-biological laboratory—France ahead of all other countries in the encouragement she gives to science. Swine Plague and Texas Fever Commissions.—Investigators are not made—but financial help is necessary to them—what of our patho-biological laboratory—changes in the swine plague commission—it is at work—first in Baltimore, now has gone South—interest in the report—Dr. Klein's remarks on Dr. Salmon. Cresyl or Creoline and Eseridine.—New drugs in veterinary pharmacopeæ—advantages of cresyl as an antiseptic—experiments in its use. Eseridine.—Offers advantages over Eserine. The Review Prize.—Same committee is reappointed—applications will be recived any time—come one, come all. Regulation of the Practice of Veterinary Medicine in Pennsylvania.—An old bill in an improved form—our wishes for its success—good pleading of the committee in charge of the bill. Cruelty to Animals.—Dastardly abuse of a professional title—diabolical act punished by well deserved sentence to hard labor—the so-called veterinary surgeon not a member of our profession.

"The Triumph of Pasteurism."—It is in this well-chosen and justly applied phrase that Dr. G. Fleming refers in the *Veterinary Journal* to the inauguration of the Pasteur Institute, which took place on the 14th of last November. The appeal which had been made in the name of science had been satisfactorily answered, more than two million and a half francs having been subscribed, and, after the payment of all expenses, a little less than one-half of that sum remains to insure the continuation of the work. Many persons seem disposed to regard this as simply a scientific scheme for the promotion of more vigorous and comprehensive researches in the nature and history of rabies, and, denying the value of the results already accomplished in that direction, if not indeed, blind to the fact of their discovery, seem to be quite indisposed to appreciate or sanction the necessity for any further expenditure of the money. But the proposed Institute is not to be a mere dispensary for the treatment of rabid patients, nor is it strictly only an establishment devoted to the prosecution of further researches in rabies. It is to be, comprehensibly expressed, a patho-biological institute, in which contagious diseases of every kind are to be investigated as thoroughly as possible, with whatever scientific agencies and appliances may be attainable, and every subject connected with the science of micrology will, therefore, be taught at the Pasteur Institute. The suggestion which makes the name of the famous chemist the patronymic of the institution is a wise one. The science of micro-biology is largely his debtor, and in recognizing this fact by responding liberally, as they have done, to his call for support in a good work, his countrymen have honored themselves as well as Pasteur. Dr. Fleming speaks truly, when he says that "France now stands far ahead of every other country in the encouragement she gives to science," and not many well informed scientists will dispute the verdict.

Swine Plague and Texas Fever Commissions.—The remark of Dr. Fleming quoted above may be fitly accompanied by another utterance of the same gentleman, to the effect that "investigator of the Pasteur type cannot be created by State intervention," which, however, leaves room for a word of qualification. It is true that the State cannot create the accomplished investigator, but it is equally true that when the man of genius is born, the State may very largely contribute to the efficiency and value of his studies and his discoveries, and that one of the methods by which this can be accomplished is the establishment or "creation," and endowment of patho-biological institutes, and other similar centres and promoters of study and knowledge. And it gives us pleasure to notice that our National Legislature is not wholly oblivious, in a way, to this truth, and that, in fact, there already exists, in a somewhat embryonic way, something like a materialization of the abstract fact in the Commission on Swine Plague already in operation. Besides this, we may also allude to the commission or committee appointed by the Union Stock Yards in Chicago, for the prosecution of special investigations in Texas fever, in which the appearance of the names of Dr. Stalker of Iowa, and Dr. Casewell of Chicago, are good proof that our people have not remained quite indifferent to the study of at least these economic and domestic branches of science.

The composition of the Swine Plague Commission, which had been appointed by Commissioner Coleman, has been somewhat modified, Dr. Meade Bolton being appointed in the place of Professor Welsh, who has found himself unable to perform the duties of the position. Thus constitued, the commission has entered upon their work, and after some labor performed in Baltimore, have adjourned to South Carolina. Their report cannot fail to include facts of a very interesting character, and it will be watched for and carefully studied by breeders, pathologists and veterinarians, as well as all others who may feel a scientific or commercial interest in the subject. This interest has been highly intensified by the expression of antagonistic opinions by Drs. Salmon and Billings, the two most conspicuous of the biologists among those who have made a special study of this most dangerous and troublesome scourge. And this is in fact, not a mere personal discussion between adverse American scientists, but is also a contention of opinion which involves the investigators of Europe, as well. It has recently engaged the pathologists of England, and among these an article by Dr. Klein in the *Veterinary Journal* for December last may be cited, as of interest and value, under the title of "Remarks on the Etiology of Swine Fever."

In this Dr. Klein says:

> In his most recent publication on swine-plague, Mr. Salmon maintains (Report of the Commissioner of Agriculture for the year 1886) that the infectious disease of swine known in America as hog cholera or swine-plague, in this country as swine-fever or swine-plague, really comprises two different infectious diseases: (1) one disease is chiefly localized in the large intestine—hæmorrhagic ulcerative enteritis—this is the hog cholera; (2) the other is chiefly an affection of the lung, the swine-plague.

These statements are irreconcilable with the experimental evidence which I published in 1878 (Reports of the Medical Officer of the Local Government Board for 1877–78), and with the observations made also on the disease naturally occurring amongst swine. I have shown in that report, by numerous experiments, that by inoculation or by feeding of healthy pigs with particles of the diseased lung, or of the ulcers of the large intestine or of the peritoneal exudation, the same disease is produced ; from the post mortem examination of such experimental animals, as well as those that had become naturally affected with the disease, I have shown that it is chiefly the lung, next also the large intestine, which is subject to the disease, and I have therefore spoken of it as infectious pneumo-enteritis. By injection as well as ingestion of matter taken from the ulcers of the large intestine, I have produced in healthy pigs the typical disease of the large intestine and also of the lungs; further, by injection of matter taken from the diseased lung I have produced in healthy pigs the typical disease, both of the large intestine and of the lung. There can be no question, from an inspection of my records of post mortem examinations of these experimental animals (*l. c.* pp. 183–207, experiments i.–xxii.), about the unity of the pulmonary and intestinal disease. An appearance to which I have drawn attention in the above report, is the hæmorrhage in the endocardium, chiefly of the left ventricle about the mitral valve (*l. c.* plate xxii., fig. xxxi.) These hæmorrhages were seldom missed on post mortem examination of the animals affected naturally or experimentally, either with lung disease, with simultaneous intestinal ulcerations, or with lung disease only. During this year I have had the opportunity, thanks to Mr. C. Humphrey, veterinary inspector in Wandsworth, to notice an isolated epidemic in swine-fever that had occurred in the farm belonging to and supplying the county asylum at Wandsworth. This epidemic is instructive because it occurred in a positively isolated locality ; that is to say, a locality that does not stand in any communication, either by the attendants or by purchases and introduction of fresh pigs, with the neighborhood. On this farm the number of pigs generally present is just over 100, when fresh farrows about 200. The supply of pork, owing to the large number of inmates in the asylum, is very considerable, and is all derived from the farm.

The last outbreak of swine-fever in this farm occurred in April, 1886, and since that time till March, 1888, no case had occurred. In this year's epidemic the first case was noticed on March 8. Mr. Humphrey, on post mortem examination, pronounced it a case of swine-fever, the intestine and lungs showing the typical disease. Till the middle of April, 61 pigs had been examined, and found affected with swine-fever. Of them only 31 had the intestinal disease (ulcers of large intestine), in 30 the intestine was free of disease, but all 61 had the typical disease of the lungs, and most of those examined in this direction had the hæmorrhages in the endocardium of the left ventricle. Now, it is extremely unlikely that the first pig had two different diseases, and it is also very unlikely that 31 pigs, *i. e.*, those in which lungs and intestine were affected, had two diseases, while 30, *i. e.*, those in which the disease of the intestine was absent, and only the lungs were found affected, had the single disease. These observations harmonize well with those recorded in 1877–78, viz., while the lung affection is constantly present, that of the intestine is absent in a number of cases. Neither in 1877–78, nor in this epidemic at Wandsworth, was there a single case with intestinal disease only, without the lungs being involved.

Let us hope that much good will be derived from the work done by the Commission, and that while the nature, shape, size and "kicking ability" of the germ, (as says the *Breeders' Gazette*) may be definitely determined, some practical means of prevention may also be developed.

CRESYL OR CREOLINE—ESERIDINE.—The list of substances and preparations employed for antiseptic purposes is not only already very extensive, but the experiments continually in progress for testing the value of the various compounds which find a place in the armory of the surgeon promise largely to increase their number and value. Among these, a comparatively new article has been introduced into veterinary practice, which is not only of value on account of its antiseptic properties, but possesses an added interest in the fact of its beneficial efficiency as a curative in the treatment of cutaneous diseases. Cresyl or Creoline, the substance in question, is another member of the numerous family of preparations of phenic origin and nature. It is of a syrupy appearance, is blackish in color, resembling creosote in smell, and has an alkaline chemical reaction. It is soluble in alcohol and ether, and forms a milky emulsion with water, a mixture that can be preserved for a long time. It has been used with great advantage by Frehner, Esmarch, Eisemberg, and others, not only as an antiseptic upon numerous pathogenous microbes, but also in cutaneous diseases, and is of so harmless a nature that a five per cent. solution has been administered internally, not only without bad results, but with great advantage. On this account it is recommended by Continental practitioners in the eczema of dogs; in catarrhal affections of the stomach; in chronic diseases of the nasal cavities; in auricular catarrh; and in all the various forms of parasitic affections of the skin. Creoline is an inexpensive article, and if its properties are not overrated, it is certainly entitled to a prominent place among the resources of the veterinary pharmacopeæ. The mention of this new drug suggests another, which we would bring to the notice of our readers as an article which has had a fair and satisfactory trial in Europe by a number of German practitioners. We refer to Eseridine, a new alkaloid resembling physostigmine, and which like that substance seems to possess valuable properties as a purgative, or as a stimulant of the spine. The dose for horses is one gramme or less, and to cattle two grammes in solution. We are now experimenting with it, and will keep our readers duly informed of the results we may reach. From the reports which have come under our notice, it would appear to possess properties more valuable than those of eserine, with which all practitioners are familiar who have witnessed its good effects in obstinate constipation.

The Review Prize.—We have one word more to say about the next Review prize. The verdict of the committee appointed last year to decide on the competition of the papers presented, has been confirmed and consummated by the delivery of the prize. The same committee has been reappointed for the coming year, since a better selection could scarcely be hoped for, and all things excepting the competing authors are, therefore, now ready. While the judges are waiting and the prize is anxious to reach the hands of the victor, will the contestants hold back? It is a matter of some importance, not, indeed, because of the value of the prize, for that is small enough, but for the honor of the thing, and the good that the winner may do, not alone to himself personally, but to his brethren and the profession in general. The papers ought to be sent in early, to facilitate their publication.

Regulation of the Practice of Veterinary Medicine and Surgery in Pennsylvania.—We reprint the entire bill which is to be presented before the Legislature of the Keystone State, for the protection of the rights of the veterinary profession in that Commonwealth. It is, however, little more than a rearrangement and modification of a bill which had been presented in a previous year, the alterations and improvements being of such a character as would be likely to meet the approval and command the assent of all interested parties. Endorsed, as it is, by the State and the Keystone Veterinary Medical Association, and having besides the support of many of the largest live stock owners and breeders of the State, it is safe to assume that the bill will become a law.

But who, on such a point as this, can tell, in this age of political pulls and influences and legislative manipulations, what its end is likely to be? The appeal presented to the Legislature in its behalf by the Committee is very interesting in its statement and specifications of the value of the claims of the profession, the census of domestic animals in Pennsylvania, with the wealth they represent, and the danger with which human life is beset by the prevalence of contagious diseases amongst cattle and stock animals. The facts are well brought together, which show by implication the value of the public services rendered by the veterinarian, and the obligation resting upon the law-making power to furnish adequate legal protection to the veterinarian profession in the exercise of their functions. An extract of the appeal says:

> A momentary glance at the subjoined figures must forcibly impress you as to the important position our State holds in its live stock interests, all of which come under our protecting and fostering care, and must largely be a source of greater or lesser wealth from a physical as well as monetary standpoint to every inhabitant of our Commonwealth.
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> | | | | | | |
> |---|---|---|---|---|---|
> | In Horses | we have | 700,000 | with a value | of | $70,000,000 |
> | " Cows | " | 960,000 | " | " | 25,000,000 |
> | " Cattle | " | 700,000 | " | " | 16,000,000 |
> | " Swine | " | 900,000 | " | " | 7,000,000 |
> | " Sheep | " | 1,250,000 | " | " | 3,750,000 |
> | " Mules | " | 30,000 | " | " | 3,000,000 |
>
> Representing as a grand total a source of true wealth almost reaching the vast sum of $125,000,000.
>
> Surely if only this constituted our appeal, it would be all-sufficient to commend for it your earnest consideration, but it is a single point at stake, for to the veterinarian, as the truest sanitarian, must soon be commended the preservation of the health and the increased longevity of our people. The appalling ravages committed to-day among our people by the insidious disease Tuberculosis, entailing an annual loss of 50,000 human beings, fully fifty per cent. of whom receive the germs of the disease through the ingestion of meat and milk of tubercular animals, must be a startling fact to your minds. And worst of all, this disease, to a large extent, is the result of foreign importation of improved herds of cattle, which come to our shores without the first rudiment of an inspection or vestige of sanitary police law, to limit these calamitous results. All this arises from the sluggishness of our people in failing to recognize the sore need of an advancement in the veterinary profession, the most flagrantly neglected calling of all the professions in America to-day.

CRUELTY TO ANIMALS.—Dr. W. S. Williams of Bloomington, Illinois, sends us the following clipping from a local paper, concerning a charlatan calling himself a veterinary surgeon, who committed probably the most dastardly and diabolical act of cruelty to inoffensive animals which has ever been recorded. The monster has, however, met with proper and well-deserved retribution—if that be possible on earth—for his undescribable depravity.

> TAYLORVILLE, ILL., Dec. 11.—On November 3d the Democrats had a big rally in this city. That night fifty or sixty horses were doctored with a syringe with some kind of acid and several fine horses killed. The horse insurance companies immediately put a detective at work and Dr. Charles H. Henderson, of this city, a veterinary surgeon, and his brother were put under arrest. The grand jury returned twenty-eight indictments against them, and this morning the prisoners were brought into court. The doctor made a confession, assuming the full burden of the crime and exonerating his brother. Judge Fouk at once sentenced the prisoner to twenty-eight years in the penitentiary. The sentence was received with approbation. The past history of the doctor is decidedly bad. He had been in the habit for years, whenever hard up, of injecting acid into horses for the sake of a consequent call for his services. This was the motive prompting the crime of November 3d. He was hurried to Chester to escape a mob.

ORIGINAL ARTICLES.

MAD ITCH (common name) ENZOOTIC MENINGITIS (new name).

A paper read before the United States Veterinary Medical Association, by J. C. MEYER, Sr., V.S.

The essay with the above title in the June number, 1888, of the REVIEW, recalled to mind an enzootic disease witnessed in November, 1869, among a herd of oxen kept in a distillery for fattening purpose.

Had I at that time any idea of ever having the honor of reporting cases to a body of educated and scientifically trained veterinarians, I should have been more precise in jotting down my observations. Still, incomplete as it is, I trust it will not be out of place to give a brief account of this enzooty.

Symptoms: Disinclination to all food except hay, which was eaten without relish; a moderate desire for water; rumination suspended; scanty evacuation of semi-fluid fæces; urine clear and of the usual quantity; peristaltic action sluggish.

Some were slightly tympanitic from the start, a condition which was present toward the end of every fatal disease, but intensified. Eyes dull, and often had an anxious look; saliva nearly always dribbling from the mouth. Frequent changing of the extremities, particularly the hind ones. Shivering of the shoulder muscles, as though a chill was constantly running through them. Scratching the withers with the horns; placing the jaw or neck on a fence or any other convenient object, and rubbing it with such madness as to render the skin bloody or ragged. One would stretch his head high in the air and shake it so violently as to convulse the whole fore part of the body. Another hung his head so low as to touch the ground or floor almost without intermission. Still another would lie down, draw one or the other leg toward the body, or strike out convulsively, get up and walk off as though there were nothing amiss. Some had a tottering gait at the outset, and toward the end lost all power of locomotion. Others ran around wildly in their pen almost without interruption, until exhausted. A few hours before expiring, all got down and became unconscious.

Already at the beginning these animals evinced a failing deglutition. Pulse was faint and rose to 100° and over in a short time. Heart beat scarcely perceptible. Respiration irregular in its rhythms, and rose from 40° to 70° and even 80° per minute.

The disease lasted from 12 to 48 hours.

Post mortem examinations:

No. 1. Cadaver tympanitic, a reddish serum flowed from the nostrils, bluish red spots on the schneiderian membrane, eyes very much sunken, rectum protruding. Upon removing the hide a tar-like blood oozed from the vessels, the muscles had a darker, though otherwise good appearance. The stomachs were tolerably well filled with food; the epithelium of the mucous lining of the rumen was so detachable that it fell out with the contents, and its mucous membrane was inflamed in some places, which phenomenon was not present in the other three stomachs. The intestines contained much liquid food (slop) but presented nothing abnormal. Liver was clay colored, its consistence scarcely changed.

A watery blood oozed from its parenchine. Spleen normal in size but somewhat softer; gall bladder entirely empty, the interior inflamed, the exterior emphysematous; right kidney undergoing decomposition, while the left showed no morbidity. The bladder contained a small quantity of clear urine; pancreas shriveled. Lungs small, the right dark red, both spongy. The heart wilted, endocardium of the right ventricle dark red, as was also the inner lower lining of the posterior aorta. Encephalon did not appear changed.

No. II. Œsophagus and pharynx inflamed; lungs, heart and pleura had a hyperæmic hue; liver rather tough; gall bladder full, contents more liquid than usual. Spleen same as in No. 1. Stomachs inflamed; intestines only slightly affected; kidneys flabby; bladder full of turbid urine. Brain normal, as was also the medulla spinalis as far as exposed.

No. III. Revealed similar manifestations as No. II.

No. IV. A young steer slaughtered six hours after showing the first symptoms of disease. With the exception of circulation 100 and respiration 60 to 70 per minute, no important clinical symptoms were manifest.

One stroke felled him, after which he was depleted by the butcher.

The blood was thick and black, ekchymosis in the heart, kidneys spotted red and a bit of partially masticated hay in the pharynx, were the only abnormities observed.

An infiltration of the connective tissue, with a sanginuous colored serum around the pharynx was met with in some of the cadavers.

The owner of these cattle gave to each one not yet affected one-half pint coal oil with seemingly good result. However, a few days before this medication I had the premises thoroughly cleaned, the floor sprinkled with chlorinated lime, the interior fumigated with sulphur, carbolic acid diluted with water given internally, and the cattle turned out into the open air, which latter procedure undoubtedly was most conducive to their well-being.

The public press termed this plague rinderpest. The clinical symptoms and post mortem results proved this nomenclature erroneous. The cause, according to my judgment, was in the stable atmosphere, which was poisoned by swine suffering with abdominal typhus, to which about a dozen per day succumbed. Several hundred of these grunters were housed under the same roof with the cattle, and only separated from them by a four-foot-high fence.

A colleague who was also consulted attributed the disease to the feed, (slop) which, however, is refuted by the fact that the surplus slop, during the prevalence of this enzooty, was taken away by the neighboring dairymen, as they had done for years, and fed to their cows, without experiencing the least ill effect.

In the latter part of November and beginning of December, 1871, I again had occasion to record a similar complaint in another distillery stable, about a half block from the one mentioned above.

To give the details of these cases would be merely a recapitulation of the above, as the type of the disease deviated but little, the only noteworthy difference being the shorter duration of suffering, thirty-one hours being the maximum.

One day I found the premises vacated, thus ending my observations. The majority of the cattle being fat, or in good condition, it may be readily surmised what became of them. At that time the enforcement of sanitary laws was a dead letter.

As to the probable cause alluded to before—This second lot was exposed to similar influences as the first, so far as the inhalation of impure air is concerned, though the pens of these cattle were separated from those of the hogs by a frame partition, but connected by a door. Through this opening the men who had charge of the stock moved to and fro all day, thus allowing the air impregnated with unhealthy vapors and miasma arising from the exhalation and fermentation of the excrements of these hogs afflicted with the same plague as the first lot, to pass into the oxen's stable, rendering the atmosphere which the cattle were obliged to inspire so noxious that the fatal result ensued, as I imagine, by a decomposition of the blood and parese of the nervous system.

My opinion was based mainly on the fact, that those standing nearest the aperture leading to the swine apartment fell victims to the ailment first. There it was where the materia precaus was most condensed, therefore more apt to unfold its deadly effect, while in the center and further off it was more diffused, thus the victims more scattered.

According to my views, this morbidity belonged in the category of dyscrasie of the blood, as intimated in the post mortem report, the blood being dark, thick, clammy, with little inclination to cogulate—a reddish discoloration of the intima of the posterior aorta, and ecchymosis in and on the external surface of the heart. This vascular condition was found more or less in the slaughtered animals as well as on the cadavers, and might be considered a discriminating criterion.

The tympanitis which was always present, varying in intensity and locality, and the partial dysphagia, indicated unmistakable participation of the nervous system. The sanguinous disturbance, however, was most conspicuous. To what other morbid function may the extreme desire of these animals to rub themselves be attributed than to the sensory organ, caused by alteration of the blood.

Had not A. Westerner found the meninges inflamed in his patients, I would feel inclined to doubt my theory, especially since I read an article by Prof. Vogel, wherein the cerebrum showed very little or no morbidity.

A few years after having made the above observations I had under treatment a cow with genuine spinal meningitis (Genickskrampf) when I found myself induced to change my treatment. Therefore I searched the Repertorium (rich in cattle pathology) expecting to find the desired advice. I met with cases corresponding to mine in symptomatology, but the therapeutics were wanting. Thus I was not helped out of my dilemma. Nevertheless I was repaid, inasmuch as I found the very interesting article referred to above, by Prof. Vogel, on "Spinal meningitis in cattle," wherein all the inmates of a stable became affected almost simultaneously; the disease was of four to five days duration without febrile reaction. The post mortem examination revealed that neither the substance of the brain nor its meninges were much affected, but a considerable exudation of a thin, reddish, turbid serum was found all along the spinal cord, as also an acute inflammation of the meninges of that region, most prominent from the first to the fifth vertebræ, and gradually disappearing in both directions, toward the brain as well as toward the loins; a pathological lesion overlooked by other noted veterinarians. It may be they omitted to inspect the spinal cavity for the same reason I did, namely, that the brain looked too well to throw suspicion on the medulla spinalis.

PATHOLOGY OF EQUINE SYPHILIS.

(*From the German, by Thanhoffer.*)

A synopsis of a paper read before the Illlinois State Veterinary Medical Association by W. L. Williams.

The spinal cord exhibits changes, varying in degrees as the disease is in its first, second, or last stage of development, and also varying in different parts of the cord.

One of the most constant changes consists of an engorgement and multiplication of the vessels of the pia-mater, thickening and turgidity of the pia-mater itself, and serum-infiltration into the sub-arachnoid and sub-dural spaces. These changes are most evident in the lumbo-sacral region, slowly diminishing forwards and finally disappearing; in some cases, in the cervical portion.

The appearance of transverse sections of the cord is usually normal in the medulla and cervical region, but progressing backwards shows more and more red, hæmorrhagic spots, until in the region of the conus terminalis the gray substance shows a reddish-yellow color due to pigment-degeneration. The two sides—both white and gray matter, especially the latter—lose their symmetry;—that is, one side is larger than, or differently shaped from the other.

In some sections, in place of the gray matter, we find a soft, pap-like mass, consisting of nerve-cell debris, while in other places, this degenerate mass has been absorbed, leaving in its place open cavities extending for a considerable length.

In some cases, one of the gray cornua may be found shrunken to one-fifth its normal size; while in others, the gray cornua and commissue are represented by a shrivelled, fibroid mass,–the commissue, in some cases, having wholly disappeared, as has also the central canal.

The author's autopsical notes offer no essential differences from those notes in my report. (See current vol. of Review).

The author confines his microscopical study of the central nervous system to the spinal cord, but thinks it probable that the encephalon may show important changes also, in far-advanced cases.

Even in early stages of the disease, the nerve-cells of the cord show a loss of contour in their nuclei, division of the same, appearance of granules in the cell-contents, and loss of the nuclei by this granular degeneration. Other nerve-cells undergo pigment degeneration, others suffer from the invasion of migratory cells, and in others the nuclei atrophy, leaving vacuoles.

The protoplasmic prolongations, or poles of the cells, undergo similar changes to the cell-contents and are frequently destroyed, or, while undergoing degeneration, assume a nodulated appearance.

The ground-substance or neuroglia assumes a sieve-like appearance owing to numerous small cavities, either partly or wholly empty, probably due to atrophy, to destruction and absorbtion of the nerve-cells, or to enlargement of the pericellular spaces.

The capillaries of the neuroglia are greatly widened, either uniformly or aneurismally, while in other cases, through embolism or external pressure, the vessel wastes away to an impermeable fibre.

Thrombi of pigment-cells and of white blood-cells are seen.

Large and small blood extravasations occur in the perivascular spaces, and, especially near the large fissures, are to be seen large and small granular, degenerating masses whose absorbtion probably leaves vacuoles.

Other lumbo-sacral sections show in place of the central canal, a lentil-sized, open space, extending through many successivs sections; and in the posterior gray cornua are seen cavities, 1. cm. broad, extending through many sections and destroying the cornua. Dr. Thanhoffer thinks the former due to a tubular, or *syringo-myelitis*, following extravasation around the central canal,—the inflamed tissue degenerating and being absorbed, leaves the vacuoles.

New formations of connective tissue occur in both white and gray substance, and in other cases, the posterior cornua are replaced by shrivelled connective-tissue bands.

The spinal meninges sometimes show congestion and the same changes of blood-vessels noted elsewhere in the cord.

In a few cases, the nerve-roots showed atrophy; fatty, or connective-tissue degeneration, and loss of axis cylinder.

The cells of nerve ganglia undergo essentially the same changes as the cells in the spinal cord. The ischiatic nerves show no marked changes.

The "*thalerflecke*," or sharply-defined skin swellings, so characteristic of equine syphilis in all its stages, are due mainly to disease of the corium, and consist of a saturation—principally about the sweat glands and *arrectores pilorum*—with small granules, apparently due partly to cell-migration and partly to cell-proliferation. The cause of these *thalerflecke* Dr. Thanhoffer believes to be the aforementioned changes in the cord, its roots and ganglia. Recent anatomical investigations have shown that the nerves of the skin and muscles of the rump take their origin from the lumbar region, that place from which also the genitals and posterior extremities receive their innervation; indeed, according to the more recent investigations of Stricker, Luchsinger and others, from here spring also the vasomoter nerves of the extremities. It is further noteworthy that the *thalerflecke* occur mainly on the rump and thigh (and further of flank W.), and are rarely seen on the head and neck; but this may happen without contradicting the foregoing, since in severe cases the cervical cord and, in the last stages, even the medulla or the brain itself may become affected. But *thalerflecke* are by far more common on those parts receiving their innervation from the lower dorsal, or lumbo-sacral cord, where in all stages of the disease by far the most serious changes are noted.

Dr. Thanhoffer draws a sharp distinction between the mild venereal disorder (chancroid), and equine syphilis (maladie du coit, or "zuchtlahme"), averring that the local symptoms as shown by the external genitals are of little diagnostic value and would only pronounce the case one of equine syphilis when, in addition, the animal shows abnormal sensitiveness of the loins, lameness and *thalerflecke.* He has seen but few eruptions on the external genitals, and those were ephemeral and of little or no diagnostic value.

Other changes of the external genitals, described in my report, are not mentioned by Dr. Thanhoffer.

The Doctor found several forms of germ-life in various diseased tissues, but offers no definite conclusion as to the part played by any one of them.

CASE REPORT OF INTESTINAL CALCULI.

A Paper read before the Maryland State Veterinary Medical Association by
T. F. Barrow, V.S.

The subject, a gray mare eleven years old, sixteen and a half hands high, weighing about fourteen hundred pounds, the property of P. T. George & Co., was brought to my infirmary at eight o'clock Tuesday morning, December 11th, suffering with the following symptoms: enteric pains of a recurrent character; temperature, 101⅗° F.; pulse, 48; respirations slightly accelerated; considerable abdominal distention. Upon making inquiries relative to the prior condition of the mare, ascertained that she had suffered for some considerable time with irregular bowels, and her appetite was very capricious. Made a rectal examination, removing some dry hard fœcal matter; the animal had occasional pains and no movement of her bowels, for three days previous; no appearances of hepatic complication. Diagnosis: Intestinal obstruction. Gave the following drench: ol. lini. ℈i, pulv. barb. aloes. ℥ss, soda bicarb. ℥ss; administered an enema and placed the animal in a loose box. Six hours later, finding the mare very uneasy, gave her a hypodermic injection consisting of four grains of sulphate of morphia, combined with a quarter of a grain of sulphate of atropia and gave another enema. No further symptoms of pain were observed during the balance of the day. Wednesday morning, December 12th, found the mare suffering severe pain, the paroxysms occurring more frequently; bowels still unmoved. Gave ℥i of aloes, ʒi fluid ext. nux. vomica, ʒi fluid ext. belladonna, fifteen minims of fluid ext. capsicum, applied blankets wrung out of hot water to abdominal region and administered another enema. Repeated the hypodermic injection of morphia and atropia, which again appeared to afford the animal great relief, which continued during the rest of the day. Thursday morning, December 13th, found the mare's condition as follows: Temperature, 102⅗°; pulse, 60; respirations, 20; increased abdominal tension, almost continual pain; bowels still unrelieved. Suspecting the presence of calculi, called in Dr. William Dougherty for consultation. That gentleman considered the case to be one of mechanical obstruction due to the presence of a calculous deposit in the intestines, and advised that a trial be made, of the eserine and pilocarpin treatment. Accordingly at ten o'clock Thursday morning he administered one and a half grains of eserine combined with two grains of pilocarpin. The following effects of the medicine were noted: profuse salivation ensued in twelve minutes; first discharge from the bowels in forty minutes; second in fifty-two minutes; third discharge in two hours. After that the cathartic effects of the medicines gradually diminished: the usual physiological action of pilocarpin on the skin was but feebly marked in this case. Six hours after the administration of the medicines the temperature was reduced to 101⅕°; pulse, 48; respirations nearly normal and no apparent pain. From that time forward the mare's condition varied from day to day. She lingered along until the 28th day of December; during that time her treatment was chiefly directed towards the symptoms as they presented themselves. At ten o'clock on the night of December 28th, it being the eighteenth day since her reception at the hospital, she looked brighter and more cheerful than she had for several days previous; temperature, 101⅕°; pulse, 47; respirations tranquil; she drank some oatmeal gruel. Next morning at 6 o'clock the mare was found dead. Upon post mortem examination found the large colon ruptured near the pelvic flexure; laying right in the breach found two calculous balls embedded together; further on toward the gastra-hepatic curvature found the third and last one. The weight of the largest ball was five pounds, greatest circumference twenty inches; the smaller ones weighed respectively three and one-half and three pounds. The stomach, small intestines, cœcum and double colon were completely packed with food, (and ingesta) the single colon merely containing some fluid. The mucous surface covering the whole extent of the intestinal tract was much inflamed. No appreciable lesions of the other organs were observed, so far as a superficial examination revealed. Upon a review of the case I am inclined to think that the rupture in the bowels occurred during the night of the 28th, or very early next morning, the bowel giving away in consequence of the great pressure brought on it by the immense accummulation of food and ingesta, the mare speedily dying of collapse. In support of this view I will add that appearances about the ruptured portions of the bowel indicated it to be of recent origin. In regard to the therepeutical action of the eserine and pilocarpin, from the rapidity in which it excited the peristaltic action of the intestines, after the continued failure of other medicines, I feel convinced that it might often be advantageously employed as a remedial agent in veterinary practice.

ESERINE.

A Paper read before the Ohio State Veterinary Medical Association by W. R. Howe, V.S.

Mr. Chairman and Gentlemen:

Lately we have heard and read a great deal about the use and usefulness of the drug eserine.

Eserine, or physostigmine, is the alkaloid of the seed or bean of Physostigma venenosum, or calabar bean. The bean is kidney shaped, with a furrow running longitudinally along its convex margin, about an inch in length and three-fourths inch wide, very hard and shiny, brownish-red in color. Within the shell is a kernel consisting of two cotyledons, hard and white.

The alkaloid was first isolated about 1864, but has never been in very general use in the practice of medicine except in the treatment of tetanus, and for the purpose of contracting the pupil in ocular practice.

A French surgeon, I think, first advocated its use for the treatment of colic in horses about the year 1883 or 1884. Soon afterwards Prof. Liautard brought it to the notice of the profession in this country through the REVIEW, and your servant is glad to say has used it ever since with gratifying results.

The first knowledge we have had of its use was to poison criminals in Africa, and it is said to have always proved fatal except when vomiting occurred.

It is said that nineteen seeds when made into an infusion will kill a man in an hour. The principal symptoms are failure of muscular power of all parts of the body, and death perhaps from paralytic asphyxia, muscular tremor diminished, reflexed action and contraction of the pupil; the mind is not affected; there is purging and often vomiting, and powerful peristaltic movement. In man, there is a feeling of faintness, a loss of vision, extreme weakness, slight nausea, pulse irregular, mind normal, and no pain. Large doses paralyze or retard, while small doses increase intestinal peristalsis and bronchal movements. Hypodermic injections of atrophia is a very sure antidote. The alkaloid is the preperation mostly used, and if fresh and pure is very positive in its action. I fear a poor or decomposed article or a lack of knowledge of the dose is the cause of the failure of good results. Eserine if exposed to light and air will lose its potency rapidly.

A solution decomposes, turns first red, then purple; in this state does not lose its power to contract the pupil, but is not reliable to overcome spasms of tetanus or stimulate peristalsis.

In the treatment of tetanus in man, eserine is given in one-eighth grain doses every two hours until the spasm is relieved, when the dose is lessened. For the horse suffering with tetanus give from two to four grains per mouth, or one-half that amount hypodermically, and perhaps is the best remedy we use in the treatment of this disease; it lessens or overcomes the spasms and improves the action of the bowels. It is in cases of indigestion, colic, flatulency from any cause, obstinate constipation, azoturia, or almost any case where it is necessary to get a prompt action of the bowels, where this drug is of most value to the veterinarian. In acute indigestion in the horse, a hypodermic injection of from one-fourth to three-fourths grain, according to the patient and case, relieves the pain by overcoming the spasmodic condition, stimulates the flow of the gastric secretions, thus aiding digestion, stopping fermentation, and stimulates natural peristalsis even when the bowel is paralyzed by distension, thus promptly evacuating the bowels, not only of fæces, but flatus, and removing not only the cause of the trouble but the trouble itself, in less time than by any other known treatment. In constipation, if given in small repeated doses, will often give complete relief. I have had excellent results in treating azoturia with this drug by giving one grain and following with one-half grain doses every half hour until the bowels moved freely; it not only evacuates the bowels, but relieves the spasmodic condition of the glutial muscles in from one to three hours in moderate cases. I have used it in several cases of immobility to evacuate the bowels, which it has never failed to do. There is generally considerable improvement of the other symptoms, but I always follow it with philocarpine in about fifteen grain doses hypodermically, generally with pleasing results. I have never combined eserine with philocarpine.

Where a cathartic has failed to act in time, a hypodermic of eserine will generally bring about the desired result. To dogs suffering from fits caused by constipation, one-thirtieth to one-tenth grain hypodermically will often give complete relief.

In parturient apoplexia in cows it appears to give relief, but so far as my experience has gone it has been merely temporary, as it appears to soon lose its effects. Drs. J. M. Weaver and C. C. Meyers, both physicians of good standing in Dayton, Ohio, report that they have used eserine with excellent results and prompt relief, where other remedies had failed, in flatulency following child-birth.

The great object in advocating this drug in the treatment of colics, etc., is that many able veterinarians have taken exception to the virtue claimed for it, while I feel confident it has all the merit, when properly administered, its advocates claim for it. Until this drug was introduced, the general principle of treating colic, etc., was direct opposites, such as opium in some form, and oils, aloes, etc., one directly counteracting the other, which appears to me as being inconsistent.

UNUSUAL SEQUEL OF TRACHEOTOMY.

A Paper read before the Illinois State Veterinary Medical Association, by Dr. J. McClintock, V.S.

Mr. President and Gentlemen :

My motive is to bring before the profession something new and experimental on my part, which I am pleased to say has surpassed my expectations.

In June last I was called to see a valuable filly about six weeks old suffering from strangles, the abscess having only appeared in the form of a tense swelling, not large or well-defined, with difficult breathing. I applied a stimulating liniment, steamed and used warm poultices of bran; good care, gave a few doses of febrifuge medicine and tonics. Paid another visit twenty-four hours after, and found the little animal nearly suffocated, when I concluded the only way to save life or prolong it was to perform the operation of tracheotomy, which I proceeded to do. The trachea being too small to admit a tube of the usual size, I introduced a wire suture through the muscles on each side and tied over the neck, but finding that air was not admitted sufficiently I cut one ring of the trachea across, and removed a quarter of an inch from each end, after which it breathed freely. About six days after I opened the abscess and closed the wound in trachea by sutures. About three weeks after it was in the field and apparently well, when a cold rain and thunder storm came up and got the filly thoroughly wet, after which difficult breathing again took place, and it became necessary to perform tracheotomy. This time I introduced the tube, which was allowed to remain in five days, when I removed and closed the opening. In about three weeks difficult breathing came on, and finding the obstruction was at the point where I had operated, and judging there was something unusually wrong, I cut through, and found the cartilages had taken on an abnormal growth which almost closed the trachea. Introducing the tube I was able to allow breathing to take place, but when removed collapse would follow. Knowing something would have to be done to overcome that difficulty, and not finding any information in any of our works, I was thrown on my own resources. Procuring a silver plate four inches long and three and a half inches wide, I formed it into an incomplete tube having two clasps, one and a half inches apart in front, and fastened with silver rivets. All being in readiness I dissected round the trachea to the back part, removing three rings completely, except a small portion at the posterior part which seemed to be healthy. I used cocaine as an anæsthetic. I then inserted the tube upwards, bringing it back to place, clasping over the upper and lower rings, and closing the opening with silk sutures. After allowing the filly her freedom, found all difficulty of breathing had been overcome, never missing a feed, being apparently healthy, excepting the wound. Inside of four weeks the wound was completely healed with a slight enlargement, over which I applied an absorbent blister, which reduced it completely. I have frequently seen it run fast when playing, and it is impossible to notice from the breathing that she carries a silver tube in the windpipe.

In conclusion, in giving this communication I hope I have at least advanced an idea that may be of some benefit to our profession.

Rabies in Fœtus.—According to M. G. Zaigari, the bulb or spinal marrow of fœtus of rabid females is not virulent—neither is the milk or the amniotic fluid of the mother—neither any of the fluid of the fœtus. In other words, in the rabid female, the organism of the fœtus is not contaminated.— (*Revue Scientifique.*

SNAKE BITE AND ITS ANTIDOTE.—VII.

BITE OF THE GILA MONSTER.

By H. C. Yarrow, M.D., Curator Dept. Reptiles, U. S. National Museum.

(*From Forest and Stream.*)

(*Continued from page* 459.)

On February 7, 1883, Drs. S. Weir Mitchell and Edward T. Reichert read a paper before the College of Physicians of Philadelphia, entitled "A Partial Study of the Poison of *Heloderma suspectum* Cope, the Gila Monster," in which the statement was made that after several experiments with the saliva of this reptile, they had come to the conclusion that it possessed strongly venomous properties. This had been suspected by some naturalists, from the fact that this lizard possessed anterior deciduous grooved teeth, which communicated by ducts with large glands near the angle of the lower jaw. All sorts of conflicting reports have been published from time to time regarding this reptile, some observers claiming that it is deadly venomous, others believing it perfectly harmless; in fact, in some parts of the Southwest it was kept as a household pet. Bocourt and Dumeril mention the bad name it has in Mexico, and Sumichrast states that the natives hold it in the utmost terror, and consider it as more fatal than any serpent. A fowl bitten by it died in twelve hours, with bloody fluid exuding from its mouth, the wound being of a purple tint. A cat bitten was very ill, but recovered, remaining thin and weak. Sir John Lubbock reports that a *Heloderma* sent him killed a frog in a few minutes, a guinea pig in three minutes. Dr. R. W. Shufeldt, of the United States Army, reports serious symptoms after having received a bite on the right thumb, but no permanent disability followed.

The writer has for several years endeavored to trace out an authentic account of death resulting from the bite of the Gila monster, and the following is all the evidence in his possession. The first account was secured through Dr. S. P. Guiberson, of Ventura County, Cal., and is as follows:

"G. J. Hayes, a miner in from the Frazer mine, says that in

1878, or '80, in Tip-Top Mining Camp, Arizona, he saw a Gila monster bite a man by the name of Johnny Bostick, who at the time was under the influence of liquor. That he took hold of the *Heloderma* and shoved his finger at it, and the reptile seized his finger, and its jaws had to be pried open before he could disengage his finger. The *Heloderma* was 22 inches long and lay on the card table. It was also seen by a man named Lou Smith, and a lot of Italian miners. Immediately Mr. John Bostick drank large quantities of liquor, and from the effects of the bite one side was paralyzed, and he died in about three months, April 19, 1878. I hereby certify that the above statement is correct.

(Signed) G. J. HAYES."

Subscribed and sworn to before me, a notary public, this 19th day of April, 1886.—S. P. GUIBERSON, Notary Public for Ventura County, Cal.

The second affidavit, which follows, differs somewhat from the first, but relates to the same individual. The query is, was the *Heloderma* bite the cause of death or was it the whiskey so lavishly administered.

STATE OF CALIFORNIA, County of Ventura.—R. C. Carleton who first being duly sworn, deposes and says that he was present at the time and knows of his own knowledge, that Johnny Bostick, of Tip-Top, Arizona, was bitten by a Gila monster, from the effects of which he afterwards died. That the Gila monster seized one of the fingers or thumb of the said Johnny Bostick, and that in order to disengage the reptile the boys cut its head off. That deponent thinks it occurred in 1883. Subscribed and sworn to before me this first day of December, 1886.—R. C. CARLETON.

S. P. GUIBERSON, Notary Public. (A true copy).

In conversing with Dr. F. V. Ainsworth, U. S. A., who has had a large experience in Arizona, upon the subject of the bite of the Gila monster, he informed the writer that he had heard of a case of death from the bite of this reptile, but that his brother Frank K. Ainsworth was conversant with the details, and he obligingly offered to write and procure full particulars. From the letter which follows, it will be seen that the case is reported by Dr. G. E. Goodfellow of Tombstone, Arizona, to Dr. Ainsworth:

TOMBSTONE, July 23, 1887.—*My dear Ainsworth:* I at last am ready to reply to your letter concerning "snakes." The Fairbanks case was as follows: Yeager, about 55 years of age, was in May, 1885, in Fairbanks, Arizona Territory, bitten by a Gila monster. He, to prove the innocuousness of the beast, put his left thumb and forefinger into his mouth, and he was bitten. He was immediately loaded to the guards with whiskey—it happened in a saloon—and he seemed all right, save for a slight numbness and swelling in the hand and arm. He sat down in a chair in the saloon, talked with those around for an hour. The crowd thinning out, he seemed to drop asleep. In about an hour more, the saloon keeper spoke to him, but not making a reply, he was taken hold of and found to be dead. I was sent for, but before I could leave received a second message announcing his death. He was a man addicted to the use of liquor, and so far as I can ascertain had been on a prolonged spree for months. Whether he died of the reptilian poison or a combination of whiskey, disease and Gila monster I cannot say.

About four years ago on the lower San Pedro I was informed that a man had been bitten in the foot while in the field and died within three hours. I could neither prove nor disprove the case.

That the Gila monster is a poisonous lizard cannot now be denied. That its bite is fatal uniformly is open to discussion. I have always considered that they were a trifle more poisonous than the scorpion, tarantula and centipede, not even approaching the rattlesnake, and I have been accustomed to regard the bite of the three first mentioned as little worse than the sting of a bee or wasp. I have known of bee stings killing, but though I have seen many bitten, and have had a personal experience as well, never have I known of a death to occur from the bite of a scorpion, tarantula or centipede. That they can kill under certain conditions I am convinced. * * * Very respectfully, G. E. GOODFELLOW.

These accounts are the only authentic ones the writer has been able to gather, after ten years of constant labor and research.

On the other side it may be stated that Mr. Horan, the superintendent of the National Museum, has been bitten several times by this lizard without serious results following.

The first experiment of Mitchell and Reichert was as follows: "About 4 minims (of saliva) was diluted with one-half cubic centimetre of water, and thrown into the breast muscles of a large strong pigeon at 4:25 P.M. In three minutes the pigeon was rocking on its feet and walking unsteadily. At the same time the respiration became rapid and short, and at the fifth minute feeble, at the sixth minute the bird fell in convulsions with dilated pupils, and was dead before the end of the seventh minute. The first contrast to the effect of venom was shown when the wound made by the hypodermic needle was examined. There was not the least trace of local action, such as is so characteristic of the bite of serpents, and especially of the *Crotalidæ*. The muscles and nerves responded perfectly to weak induced currents, and to mechanical stimuli. The heart was arrested in the fullest diastole, and was full of firm black clots. The intestines looked congested. The spine was not examined." A number of other experiments made by these experienced investigators left no doubt in their minds as to the terribly venomous character of the *Heloderma* saliva.

Before giving notes of the experiments made at the National Museum, it may be well to describe the process by which Drs. Mitchell and Reichert obtained the saliva, and our own. The first consisted in "provoking the reptile to bite on a saucer edge, which it was not disposed to do. When once it had seized the saucer it was hard to pull it away, so powerful was the grip of the lizard's jaws. After a moment a thin fluid-like saliva dripped in small quantities from the lower jaw. It was slightly tinted with blood, due to the violence of the bite, and it had a faint and not unpleasant aromatic odor. The secretion thus collected from the mouth was distinctly alkaline in contrast to serpent venoms, which are all alike acid."

Our own method consisted in forcing the lizard to bite upon a piece of artist's gum, which being elastic and yielding, did no injury to the teeth and afforded a fair hold. So soon as the saliva appeared to be flowing it was carefully swabbed up with pledgets of absorbent cotton, which were washed out with glycerine, and in this way we had no difficulty in securing all of the fluid needed. It was preserved in glycerine the same as our serpent venom.

The first experiment, November 8, 1887, was as follows:

Nov. 8, 1887—12:17 P.M.—Held left hindleg of rabbit to *Heloderma*, who grasped it with his teeth, and held on for three-fourths of a minute, biting fiercely.

1:30 P.M.—Rabbit a little lame, but enjoyed eating as much as before.

3 P.M.—No result so far.

Nov. 9.—Rabbit appears to be perfectly well with the exception of a very slight lameness of the left hind leg, due to the lacerated wound made by the lizard's teeth.

12:30 P.M.—Held leg of another rabbit near the mouth of a different *Heloderma* from the one used in the former experiment, and irritated the reptile until he took hold. In this case the rabbit's leg was seized several times and bitten to the bone, the reptile being unwilling to let go. There was a copious flow of saliva, which ran over the teeth wounds and was rubbed in by the experimenters, care having been taken to remove the hair from the rabbit's leg. In fact this was done in every case, as it was feared the thick fur might prevent the saliva from reaching the wounds.

3 P.M.—No result.

Nov. 10.—No result.

Nov. 11.—No result except slight lameness.

Nov. 17—12:45 P.M.—Injected three minims of solution of *Heloderma* saliva in leg of hen (brown). Respiration somewhat increased, but no other symptoms noticed.

2:30 P.M.—Fowl in about the same condition; respiration slightly increased and breathes with beak partly open.

Nov. 18.—Fowl appears to be entirely recovered.

Nov. 20.—Chicken completely recovered.

In this case the increased respiration was probably due to the fact that the chicken being a very noisy one it became necessary to compress its throat to avoid annoying other workers in the Museum.

Nov. 22—12:19 P.M.—Injected ten minims of the solution of *Heloderma* saliva and ten minims of water into left breast of another hen. This chicken was very thin, but perfectly healthy, and had been used for two rattlesnake venom experiments with ligature and recovered.

12:25 P. M.—Increase of respiration, wants to lie down, defecates, feathers ruffled.

12:30 P. M.—Panting heavily; peculiar outward and inward movements of rectum; eyes closed and very drowsy.

Nov. 28—Chicken entirely recovered, and has been so for several days.

12:35 P. M.—Injected 25 minims of solution of *Heloderma* saliva into left leg of another hen.

12:40 P. M.—Hen lying down, respiration quickened, and breathes with mouth open.

2:30 P. M.—Chicken still lying down and breathing fast.

Nov. 29—11 A. M.—Chicken in same condition as yesterday; will not eat.

Nov. 30—11 A. M.—Chicken improving; eats a little.

Dec. 1—11 A. M.—Chicken appears to be all right; eats well.

Dec. 2—11 A. M.—Chicken entirely recovered.

Dec. 5—12:15 P. M.—Injected 25 minims of solution *Heloderma* saliva into breast of chicken, same quantity into right leg, same quantity into left leg, making in all 75 minims. In a short time fowl had copious water discharge *per anum*, with a curious oscillatory movement of that opening.

12:25.—Chicken lying down with its feathers much ruffled.

Dec. 6—Chicken fonud dead. This fowl had been used for previous experiments, and was very thin and weak, and it is by no means certain whether the copious diarrhœa probably produced by the glycerine did not cause its death.

Dec. 5.—Forced largest *Heloderma* to bite a chicken on the leg (from which feathers had been removed) several times. There was a copious flow of saliva and many larcerated wounds.

Dec. 6.—Chicken seems perfectly well, no swelling or local manifestations whatever.

Dec. 7.—Chicken perfectly well.

Fearing that possibly the glycerine solution of venom (2drs. of saliva to 6drs. of glycerine) was too weak or had lost its strength through keeping, on Dec. 8 the following conclusive experiment was performed:

12:15 P. M.—Forced open the jaws of the largest and most savage *Heloderma* and collected upon a piece of absorbent cotton from ten to fifteen drops of fresh saliva. An incision was made in the breast of a chicken and the cotton placed in it and allowed to remain.

Dec. 10—The chicken appears perfectly well; no sign of indisposition or local manifestations whatever. Wound appears to be healing kindly.

Jan. 20, 1888—Wound in breast has been healed for some time, the cotton remains where it was placed and can be felt encysted under the skin and has produced no injury.

April 4.—The chicken alive and healthy with the cotton still *in situ.*

This experiment would seem to show that a large amount of the *Heloderma* saliva can be inserted into the tissues without producing any harm, and it is still a mystery to the writer how Drs. Mitchell and Richert and himself obtained entirely different results. Were it not for the well-known accuracy and carefulness of Dr. Mitchell it might be supposed possibly that the hypodermic syringe used in his experiment contained a certain amount of *Crotalus* or cobra venom, but under the circumstances such a hypothesis is entirely untenable. Moreover no local symptoms were manifested, as would have been the case had venom been inserted. Both the Gila monsters were good-sized active specimens, full of vigor, secreting a considerable amount of saliva, and we can hardly suppose that the short captivity they had suffered could have so modified their saliva as to render it innocuous.

(*To be continued*).

EXPERIMENTAL PHYSIOLOGY.

THE GRAPHIC METHOD FOR THE STUDY OF THE PAROTID SECRETION IN THE HORSE.

By Prof. Kaufman, of Alfort.

The markings obtained by the Professor have confirmed the following characters, already indicated by Colin, in his experiments through the means of simple fistulas :

1st.—The parotid secretion in the horse is intermittent.

2d.—It is entirely stopped between meals.

3d.—It takes place through both glands during mastication.

4th.—But at that time it is equal in both.

5th.—It is more abundant on the side where the animal masticates, and less on the opposite.

6th.—If the mastication passes from one side of the mouth to the other, the changes in the abundance of the secretion occur in the same manner.

7th.—Each movement of the jaw corresponds with a variation in the flow of saliva.

The advantages obtained in this physiological experiment are evident, as with it the ynacegen of mastication and insalivation are strictly normal, during the entire meal.—*Journal des Soc. Scientifique.*

RESISTANCE OF RABID VIRUS TO DESICCATION AND TO CADAVERIC DECOMPOSITION.

By Mr. Galtier.

To the questions whether, first, does the saliva of a rabid animal, deposited on rags or any other solid substance, and dried in the air, retain its virulency, and does it keep long; and, would the contact of such soiled objects with a fresh wound or any absorbing surface be dangerous to man? Second, Does the virulency long resist the cadaveric decomposition in buried carcasses? Mr. Galtier reports the six following experiments:

1st.—The cadaver of a rabid dog, being buried for twenty-seven days, and the bulb inoculated to two other dogs and to two rabbits—one of each species of animal died with rabies after twenty-nine and thirty-three days; the other two animals resisting.

2d.—Of four rabbits and four guinea pigs which were inoculated with the bulb of a lamb that had died from rabies and been buried twenty-nine days, only one pig became rabid.

3d.—The bulb of a rabid lamb buried twenty-three days killed one dog and a guinea pig with rabies.

4th.—After a burial of thirty-one days and notwithstanding an advanced state of cadaveric decomposition, the bulb of another rabid lamb gave the disease to a guinea pig.

5th.—Two guinea pigs, inoculated with the bulb of a rabid rabbit buried for twenty-three days, contracted the disease. In this experiment also the nervous centres were much decomposed.

6th.—The nervous centres in a state of putrefaction of a dog suspected of hydrophobia and buried for forty-three days were inoculated to two guinea pigs, which developed the disease in twenty-three and twenty-six days, and their rabies was also transmitted to other pigs. From the above Mr. Galtier concludes that the rabid virulency can be preserved for fifteen, twenty, twenty-five, thirty, thirty-five, forty and forty-five days, in buried cadavers, and perhaps longer, and that in doubtful cases inoculation of the bulb of animals buried for these periods of time is indicated.—*Ibid.*

INTRODUCTION OF INFECTIOUS GERMS THROUGH INTACT SKIN.

By Mr. Schimmelbush.

The intact skin has always been considered to be an impervious obstacle to the introduction of infectious germs. But Mr. Roth, a pupil of Koch, has succeeded in developing a generalized infection in animals, by rubbing the skin with the bacilli of anthrax, and those of the septicemia of mice. Mr. Schimmelbush has attempted similar experiments in human moribunds. During one or two minutes he had the skin rubbed with cultures of staphylococcus, and obtained the development of pustules of impetigo, the germs having penetrated through the hair follicles. Similar results were obtained upon stumps of amputation. In rubbing rabbits with cultures of pathogenic bacilli, he succeeded in obtaining a general infection on only four out of fourteen animals, while Mr. Roth obtained the same result on four out of five animals.—*Ibid.*

AMERICAN VETERINARY COLLEGE.

HOSPITAL DEPARTMENT.

A CASE OF "BREAK DOWN" IN A FORE AND HIND LEG.

By Dr. W. Tritschler, House Surgeon.

The subject was a gray coach-horse, eight years old, which had been laid up about three weeks, for a "soreness" which is said to have been somewhat erratic in its manifestation and obscure in nature.

When put to work for the first time on a short trip, and after being out but a very short while, he began to go lame on the off hind leg: the driver stopped and examined the foot, but failed to detect anything amiss at that point, and upon continuing the journey in a little while the horse began to manifest irregularity on the near fore extremity. Both of these conditions rapidly became so aggravated (falling down several times) that he was taken out of harness and placed in the stable, getting up and lying down repeatedly during the night.

When I visited him the symptoms looked very much like those of azoturia and when with them the subject was carefully considered, I was much tempted to make my diagnosis in that direction. It being difficult to make a minute examination, as the patient was in dark stall of a cellar stable, and having no catheter to examine his urine, the animal was placed as comfortable as possible in his stall and seen the next morning in company with Dr. Coates. On that day he was found lying down. Rising with comparatively little assistance, his lameness was very evident and peculiarly characteristic. Unwilling to move, when made to do so he moved forward with very short steps, hesitating; the toe forward, almost the walk of a laministic patient. The feet were cool, the fetlock of the near fore and off hind leg were swollen, somewhat warm and very painful on lateral pressure, and while there was no tendency of the fetlock to descend nor to the elevation of the toes, a diagnosis of giving away of the sesamoid ligament was made and the animal ordered to be destroyed.

Post mortem lesions were very interesting; upon removing the skin the cellular tissue from the foot up to the knee was found infiltrated with blood of a dark color; the structures otherwise were all healthy, with the exception of the sesamoid bones and the ligaments attached to them; the suspensory ligament of the off hind leg was torn almost completely from its point of attachment to the bone and carrying with it fragments of the bone itself, the severed ends giving a crepitant sensation and being deeply stained with ecchymotic spots. In the near fore leg this condition was directly reversed, the inferior sesamoid ligaments being torn from their insertion to the sesamoids.

FRACTURE OF THE ACETABULUM, DISLOCATION, SHORTENING OF THE LIMB.

BY THE SAME.

A black pony, used for saddle purposes, while being clipped December 2, reared up from some cause and fell backwards upon the near side, and when he got up was found to be very lame in the near hind leg. Rectal examination and manipulation of the limb gave distinct crepitus over the cotyloid cavity, the external angle of the ilium having dropped about two inches. The owner being apprised of the nature of the case and advised to destroy him, insisted upon treatment for personal reasons.

Being placed into slings, the subsequent history of the case is devoid of interest, excepting that in about a week afterward the leg from the hock to the body became enormously œdematous, the sheath and scrotum also becoming involved and inducing a stubborn paraphymosis; both conditions, however, yielded to warm fomentations, suspensory bandage and liberal scarification.

The limb gradually became shortened, the coxo-femoral articulation very prominent and the gluteal muscles rapidly atrophic. When taken out of slings after about six weeks rest, he was found to move with a peculiar straddling gait and with considerable difficulty, the hip joint being very limited in its action. Rectal examination revealed a calus of considerable size over the joint and running towards the floor of the pelvis.

The post mortem lesions were very interesting, the fracture being located at the middle of the caxal bone, the acetabulum being broken into four pieces of various sizes, the neck of the ilium had dropped down, and a sharp edge of the bone resting upon the circumference of the head of the femur had worked a groove an inch and a half long and fully half an inch deep upon the promiscuous head. This part of the femur was displaced upwards and the calus extended in surrounding the entire structure forming an irregular mass from the supro-cotyloid crest to the middle of the small sciatic notch. The femur, beyond the injury to the head, was healthy, with the exception of a slight osseous deposit around the base of the head of the bone. Had the animal been allowed to live some time longer, a complete ankylosis would have taken place, with considerable shortening of the leg.

VETERINARY COLLEGE ITEMS.

American Veterinary College.—The requirements of the dissecting room of this institution have assumed such proportions that the creation of the position of *Assistant Demonstrator of Anatomy* has become a necessity. Applications for this position for the coming session may be made at once, to the Dean, and will be received up to the first of June.

Veterinary Department of the University of Pennsylvania.—We take the following paragraph from one of the Philadelphia papers:

> Dr. Rush Shippen Huidekoper, Dean of the Veterinary Department of the University of Pennsylvania, and who organized that department in 1883, has announced his intention of resigning his position and removing to another city, probablp New York. Dr. Huidekoper is well known in medical and veterinarian circles, having made an enviable record in both fields.

American Veterinary College.—The examinations for graduation will begin February 18th, and the commencement exercises of the session 1888-89 take place at Chickering Hall on Friday, March 1st, at 8 o'clock p.m.

GLANDERS.

The following letter upon the subject of glanders as an infectious disease and the propriety of killing animals suffering from said disease or farcy, as soon as recognized, is published for the information and guidance of the U. S. Army:

Baltimore, July 24, 1888.

To the Quartermaster-General, U. S. Army, Washington, D. C.

General: In reply to your communication of July 19th, I have the honor to submit the following statements and opinions:

Glanders is an infectious disease in which the infectious agent has been demonstrated to be a living micro-organism—a bacillus.

The bacillus of glanders was discovered by the German bacteriologists, Loffler and Shutz, in 1882, and the discovery has since been confirmed by several other competent bacteriologists. It is found in the nasal secretions and ulcers of the mucous membrane, in the "farcy-buds," pustules and enlarged lymphatic glands of infected animals, and it is probable that it is also sometimes present in the urine.

It is a slender rod, somewhat similar in appearance to the well-known tubercle bacillus, but more uniform in size and somewhat broader. In preparations stained with fuchsin or with Loffler's solution of methyline blue, clear spaces are often seen in the rods, which have been thought by some authors to be spores, but this is doubtful, as Loffler has found that no development occurs after the bacilli have been exposed to a temperature of 55° C. (131° F.) for ten minutes.

Pure cultures of this bacillus have been shown to produce typical glanders in horses and asses, and it is recognized by bacteriologists as the cause of the disease. The disease may also be transmitted by inoculation to Guinea-pigs and to field-mice, which animals (preferably Guinea-pigs) may be used as a test of the infectious character of the nasal secretions of a suspected animal.

Exact experiments have shown that the bacillus of glanders is killed by exposure for five minutes to a 5 per cent. solution of carbolic acid, or by a 1 to 5000 solution of corrosive sublimate.

In practice it will be best to rely upon boiling water for the disinfection of all articles which can be immersed in it without injury—rope, halters, blankets, currycombs, bits, etc. To keep on the safe side, half an hour may be fixed as the standard time which articles to be disinfected shall be immersed in boiling water, or exposed to steam at a temperature of 212° F.

Articles of leather should be repeatedly washed with a 5 per cent. solution of carbolic acid or a 1 to 1000 solution of corrosive sublimate; or immersed in such a solution for at least one hour. If the solution can be used hot, say 180° F., without injury to the material, this will be desirable.

All exposed parts of an infected stable should be thoroughly and repeatedly (three or four times) washed with a hot solution of one of the above named disinfectants. The carbolic acid solution (5 per cent.) will be preferable on account of the poisonous nature of the solution of the bi-chloride of mercury; but the latter is less expensive, and under proper supervision there should be no special danger in using it. After its use, feeding-troughs, etc., should be thoroughly scrubbed with hot water to remove all traces of the poisonous salt. The application of a lime wash to all surfaces after complete disinfection, will be desirable.

Stables occupied by infected or suspected horses should be disinfected daily by washing exposed surfaces with a 5 per cent. solution of carbolic acid, and nose-bags, halters, buckets used for drinking-water, etc., should be carefully washed with the same solution or with boiling water.

In view of the reliability of known measures of disinfection, when properly executed, I do not consider it necessary or justifiable to destroy Government property of value which has become infected by contact with animals suffering from glanders.

I do not doubt the propriety of killing animals suffering from glanders or farcy as soon as the nature of the disease is recognized.

Very respectfully, your obedient servant,

GEO. M. STERNBERG,
Major and Surgeon, U. S. Army.

VETERINARY LEGISLATION.

AN ACT TO REGULATE THE PRACTICE OF VETERINARY MEDICINE AND SURGERY IN PENNSYLVANIA.

SECTION 1. *Be it enacted by the Senate and House of Representatives of the Commonwealth of Pennsylvania, in Grand Assembly met, and it is hereby enacted by the authority of the same*, That every person who shall assume, or use, or cause to be used, any title pretaining to the practice of veterinary medicine or surgery or any of the branches of veterinary medicine or surgery, shall be a graduate of a legally-chartered veterinary college or university, having the power or authority to confer the degree of veterinary surgeon or analogous title; except as provided for in Section II. And such practitioner shall be required to register in the book kept for the purpose in the office of the prothonotary of the county in which he resides.

§ 2. Any person who has assumed the title of veterinary surgeon or analogous title, in this commonwealth, for the five years preceding the passage of this act, without being entitled to the degree of veterinary surgeon or analogous title, shall be allowed to continue the use of this title; but such person shall appear before the prothonotary of the county in which he resides and make affidavit of that fact; he shall then be recorded as an " existing practitioner,"

§ 3. The prothonotary shall purchase a book of a suitable size, to be known as the *Veterinary Medical Register* of the county, and shall set apart one full page for the registration of each practitioner; and when any practitioner shall die or remove from the county, the prothonotary shall make a note of the same, and shall perform such other duties as are required by this act.

§ 4. Every practitioner who shall be admitted to register shall pay to the prothonotary the sum of one dollar; which sum shall be compensation in full for registration. The prothonotary shall give a receipt for the same, and such registration shall take place within six months from the passage of this act.

§ 5. Nothing in this act shall be so construed as to prevent any veterinary surgeon (if legally qualified to use the title) from using the title of " veterinary surgeon " or analogous title in this commonwealth; but if such veterinary surgeon opens an office or uses the title for the transaction of business, he shall be deemed ' a sojourner " and shall conform to the requirements of this act.

§ 6. Any person who may desire to commence the practice of veterinary surgery or medicine, or any of its branches, in this State after the passage of this act, and who holds a veterinary diploma, issued, or purporting to have been issued, by any veterinary college or university in this State, another State or foreign country, shall make affidavit before the prothonotary that his diploma has been regularly issued by a legally-chartered veterinary college or university, after which such person will be allowed to register as provided for in this act.

§ 7. Any person who shall present to a prothonotary a veterinary diploma which has been obtained fraudulently; or which is, in whole or in part, a forgery; or shall make affidavit to any false statement, intended to be filed or registered; or shall use the title of veterinary surgeon or analogous title, without conforming to the requirements of this act; or shall otherwise violate or neglect to comply with any of the provisions of this act, shall be deemed guilty of a misdemeanor, and, on conviction, shall be punished for each and every offence, by a fine of one hundred dollars—one-half to be paid to the prosecutor and the other half to be paid to the county; or shall be imprisoned in the county jail of the proper county for a term not exceeding one year, or both or either, at the discretion of the court.

CORRESPONDENCE.

VETERINARIAN WANTED.

Troy, N. Y. January 11th, 1889.

Editor American Veterinary Review:

Dear Sir.—We have an excellent opening for a young veterinary surgeon. Will you please hand this letter to such an one as in your judgment would be competent to enter into a general practice.

Yours &c.,
Dougrey & Roach.

LONDON VETERINARY JOURNALS FOR SALE.

Lowell, Dec. 30, 1888.

Editor American Veterinary Review:

Dear Sir:—Please publish card in your veterinary journal, that I have for sale twenty-one volumes of *London Veterinary Journal*, dates, 1841 to 1861. Bound in leather, well, and neatly preserved. I will sell them for a fair price. With kind regards.

Truly yours,
Robt. Wood.

COPY OF A PROPOSED LAW WANTED.

San Francisco, 3rd January, 1889.

Editor American Veterinary Review:

Dear Sir.—You will confer a great favor by kindly sending me a copy of the law proposed to regulate the practice of veterinary science in the State of Pennsylvania, as the California State Veterinary Association wishes to protect itself against the ravages of an irruption of empirics into this State.

The coming Legislature is considerably exercised over the recent out breaks of anthrax, Texas fever, etc., and, we the California State Veterinary Association consider this an opportune moment to obtain legislation.

I enclose you a copy of our Constitution and By-Laws, etc. Hoping you will kindly give this your earliest attention, believe me,

Yonrs sincerely,

Wm. Bowhill.

(The publication of said act in the Review answers the application of our correspondent. Ed.)

SOCIETY MEETINGS.

UNITED STATES VETERINARY MEDICAL ASSOCIATION.

President, R. S. Huidekoper, 36th and Pine Streets, Philadelphia, Pa.; *Vice-President*, D. J. Dixon, Hoboken, N. J.; *Secretary*, W. H. Hoskins, 12 S. 37th Street, Philadelphia, Pa.; *Treasurer*, J. L. Robertson, 409 9th Avenue, New York.

Board of Censors.—Dr. E. C. Ross, Connecticut; Dr. J. F. Winchester, Massachusetts; Dr. William H. Wray, New York; Dr. L. H. Howard, Massachusetts; Dr. A. W. Clements, Maryland; Dr. W. L. Zuill, Pennsylvania; Dr. L. McLean, New York.

Library Committee.—S. K. Johnson, Chairman, 117 W. 25th Street, New York; Wm. Dougherty, Maryland.

Committee on Intelligence and Education.—W. C. Coates, Chairman, 141 W. 54th Street, New York; J. C. Myers, Sr., Ohio; B. McInnes, South Carolina; A. Peters, Massachusetts; Wm. L. Zuill, Pennsylvania.

Finance Committee.—L. McLean, Chairman, 14 Nevins Street, Brooklyn, N. Y.; W. Bryden, Massachusetts; C. B. Michener, New York.

Committee on Diseases.—A. W. Clement, Chairman, 210 St. Paul Street, Baltimore, Md.; J. F. Winchester, Massachusetts; W. B. Miller, New Jersey; R. A. McLean, New York; Paul Paquin, Missouri.

Prize Committee.—L. H. Howard, Chairman, 1440 Washington Street, Boston, Mass.; D. J. Dixon, New Jersey; J. Gerth, Jr., New Jersey.

Special Committee to secure a uniform standard of examinations by the different Veterinary Colleges of North America.—M. Bunker, Chairman, Newton, Mass.; C. C. McLean, Pennsylvania; S. J. J. Harger, Pennsylvania.

Committee on Army Legislation.—A. Liautard, Chairman, 141 W. 54th Street, New York; W. H. Pendry, New York; C. Moulton, Missouri.

Publication Committee.—W. H. Hoskins, Chairman, 12 S. 37th Street, Philadelphia, Pa.; C. B. Michener, New York; D. J. Dixon. New Jersey.

Assistant (State) Secretaries.—P. L. Colsson, V.S., Mobile, Ala.; Ward B. Rowland, D.V.S., Los Angeles, Cal.; F. W. McLellan, V.S., 144 Noble Street, Bridgeport, Conn.; Jos. C. Bushman, V.S., 404 14th Street, N. W. Washington, D. C.; H. J. Detmers, V.S., Champaign, Ill.; Madison Bunker, D.V.S., Newton, Mass.; Geo. H. Bailey, D.V.S., 1 Pine Street, Portland, Me.; Wm. Dougherty, D.V.S., 1035 Cathedral Street, Baltimore, Md.; C. C. Lyford, V.S., Minneapolis, Minn.; C. W. Crowley, D.V.S., St. Louis, Mo.; D. J. Dixon, D.V.S., 366 Washington Street, Hoboken, N. J.; J. Faust, V.S., 211 Union Street, Poughkeepsie, N. Y.; Wm. R. Howe, V.S., Dayton, Ohio; Chas. T. Goentner, D.V.S., Bryn Mawr, Pa.; C. H. Peabody, D.V.S., Cor. Union and Worcester Streets, Providence, R. I.; B. McInnes, V.S., Charleston, S. C.; J. W. Scheibler, D.V.S., 321 Second Street, Memphis, Tenn.; E. W. Rowland, D.V.S., Monroe, Wis.

LONG ISLAND VETERINARY SOCIETY.

The annual meeting of the Long Island Veterinary Society was held at 74 Adams Street, Brooklyn, on Wednesday, December 19, 1888, the President Dr. George H. Berns in the chair. There was a full attendance.

Minutes of the previous meeting stood accepted as read.

Reports were received from the Treasurer and Secretary, showing the thrifty condition of the Society, there being a substantial balance in the treasury above all liabilities. Dr. W. H. Pendry, the chairman of the Board of Censors, reported favorably on the application of E. J. Decker, D.V.S., of Springfield, L. I., who was unanimously elected to membership.

On the call for reading of papers, Dr. W. H. Pendry responded with one, taking for his subject "Laminities versus Founder," in which he contended that laminities was not of necessity founder, and sought to impress his hearers with the unfairness of so commonly using the term founder, he considering that in the latter there were structural changes which could not possibly be positively overcome, and that where laminities or simple congestion existed that the client should not be unnecessarily alarmed by being told that his horse was foundered. He quoted at length from Zundel, Williams and Dick to strengthen his opinion.

The argument was taken that the term founder was a layman's term and not a technical or professional one, and that cases of laminities were called founder, because the owner better understood it and it avoided explanation.

The causes and treatment were extensively and interestingly discussed, and a vote of thanks was extended the reader.

The election of officers for 1889 succeeded and resulted as follows: President, Geo. H. Berns, D.V.S.; Vice-President, J. Fred Mustoe, D.V.S.; Secretary, Frank J. Hanshew, D.V.S.; Treasurer, Geo. F. Bowers, D.V.S.; Board of Censors, W. H. Pendry, D.V.S., Chairman, J. F. Mustoe, D.V.S., Sam'l Atchison, V.S., Philip Newman, D.V.S. and D. S. Breslin, D.V.S.

A communication was received from Dr. A. Liautard giving the name of the veterinary surgeon who had prosecuted a party for illegal practicing under the State laws, in which the preposterous and nonsensical opinion was expressed by the presiding judge, that castration *was not* an operation of veterinary surgery, upon which opinion the prosecuting veterinarian is being sued for damages. The Secretary was instructed to place himself in communication with the party, conveying the sympathy of the Society and requesting him to forward full particulars.

The prolonged and interesting meeting was then declared adjourned.

Frank J. Hanshew, D.V.S., *Secretary.*

MARYLAND STATE VETERINARY MEDICAL SOCIETY.

The Maryland State Veterinary Medical Society meets during the winter months bi-weekly. At the last few meetings the following papers, discussions, etc., were enjoyed by those present.

November 22d, Dr. Dougherty had an essay on Castration.

December 5th, Dr. G. C. Faville led a discussion on "Influences of Climate on Glanders and Lung Troubles."

December 19th, Dr. W. H. Wray read a report of a case of Influenza complicated with Purpura Hemorrhagica and followed by Nasal Polypus with Perforation of Septum Nasi. Also a demonstration of Caponization by Dr. J. F. Ryder.

January 3d, Dr. T. F. Barrow read a report of a case of Intestinal Calculi. Dr. F. L. Russell gave a dissertation on the "Contagion of Tetanus," and also exhibited by microscope the organism of Tetanus.

The attendance at these meetings was very good, and much interest is being manifested by all members, who find themselves much benefitted by the frequent meetings.

W. H. Martenes, D.V.S., *Secretary.*

INDIANA VETERINARY ASSOCIATION.

The Indiana Association of Veterinary Graduates met in Indianapolis, January 16, 1889, and organized permanently.

The following officers were elected for this year: H. R. Macauley, Indianapolis, President; T. L. Armstrong, Indianapolis, 1st Vice-President; W. B. Wallace, Marion, 2d Vice-President; F. A. Bolser, Newcastle, 3d Vice-President; J. C. Rodger, Anderson, Recording Secretary; M. E. Knowles, Terre Haute, Corresponding Secretary; B. G. Orlipp, Indianapolis, Treasurer.

After adoption of Constitution and By-Laws, the Code of Ethics of the Pennsylvania Association was adopted.

There were about twenty-five graduates enrolled, which we think makes a very creditable showing, and that it demonstrates the necessity of making veterinary associations exclusive of charlatans to claim the undivided attention of truly professional men.

Quite an interesting and instructive paper on The Importance of Meat Inspection to Public Health, was read by Dr. J. C. Rodger, of Anderson, followed by a discussion in which all took part.

Dr. H. R. Macauley, of Indianapolis, also favored the Association with an admirable paper on The Uses of Sulphate of Morphine in Equine Practice, in which he laid particular stress on the hypodermic and intravenous use of this drug, giving his practical therapeutic experience.

An animated discussion followed, after which the date of next meeting was set for some time in September, (notification hereafter); appointment of committes and adjournment.

We have about thirty-five graduates in the State and confidently expect every one of them to become members of the Association, as, in fact, most of them have signified their intention of doing.

I will send the Review a list of members as soon as Dr. Rodger favors me with a copy.

M. E. Knowles, *Corresponding Secretary.*

NEWS AND SUNDRIES.

A Home For Infirm Animals.—Word comes from Philadelphia of a peculiar bequest, as follows: Miss Annie Wain Ryerss, of Philadelphia, at her death left $70,000 in her will to found a home for infirm animals. To carry out her wishes a farm has just been purchased near Hustleton, Pa., on which has been fitted up stables and stalls for horses and cattle. A stone kennel is being built for the care of afflicted dogs. There will be a large space in which these animals may have a run when they are sufficiently convalescent to desire and enjoy any exercise. It has not yet been decided whether to admit cats and other animals. An account says: 'The main objects of the infirmary are to temporarily care for and give rest to the horses of carters, teamsters, and others too poor to shelter and feed their stock unless they work therefor, and to afford a place of refuge for old and infirm favorites of rich people, many of whom have such an affection for pets that they will not have them killed when they become

old and feeble. For these animals a charge will be made.'"
—*National Live Stock Journal.*

Diseases in Montana.—According to one of our exchanges, regarding the prevalence of disease among horses, the territorial veterinarian, Dr. Holloway, says: "During the past few months I have examined cases of 'unknown' horse diseases in the Gallatin valley, and found severe cases of influenza with more or less of its many forms and complications. On Mizpah Creek, Custer County, I found that form of influenza known as epizootic pleuritis. In another part of the territory I found the 'unknown' to be a hoof disease, 'furuncle,' and in another place it turned out to be a bad outbreak of glanders, and so I could go on and state where I had found cases of paralysis, pyogenic fever, azoturia, 'loco' poisoning ('loco' can hardly be termed poisonous; it affects animals in much the same way that the opium habit affects people), scarlet fever, ergotism, etc., but I think this will be sufficient to convey my meaning. Taking into consideration the number of horses in Montana, the exposures to which they are subjected, and the little care they receive, I consider them as healthy as any in the Union, and I unhesitatingly state that we have no worse diseases among our horses to-day than can be found in almost every State and Territory from Maine to California.

Diseases of Children.—Messrs. J. B. Lippincott Company announce to the profession the publication of a "Cyclopædia of the Diseases of Children," medical and surgical, by American, British, and Canadian authors, edited by J. M. Keating, M. D., in four imperial octavo volumes; to be sold by subscription only. The first volume will be issued early in April, and the subsequent volumes at short intervals.

A thorough knowledge of the diseases of children is a matter of greatest importance to most physicians, and as this is the only work of the kind that has been published in English, it will be invaluable as a text-book and work of reference for the busy practitioner.

AMERICAN VETERINARY REVIEW,

MARCH, 1889.

EDITORIAL.

Are Quadrupeds Subject to Hemorrhoidal Disease?—A question put by Dr. W. Badenhamer—His negative solution—it is based on Prof. Gothier's observations—our researches on the subject—numerous authorities ignore the disease—it is accepted by a few—our observations—the question is worth the attention of veterinarians—will they help to solve it? Enzootic Bacterian Hemoglobinuria.—Dr. Paquin's paper on the mad itch or enzootic meningitis—that of Dr. J. Meyer, Sr., on a similar disease—symptoms, lesions and pathological nature of hemoglobinuria—are the three diseases alike? Meetings of Societies.—Kind invitations received which we were oblighed to decline—too short time to prepare—no bad excuse—means to remedy—the annual society meetings calendar to be issued in our next number. Sanitary Reports.—Their advantages—thanks for those received, but more expected. Reference Handbook of the Medical Sciences—Veterinary Post-mortem Examinations.—Dr. Clement's excellent article—the subdivision of the subject—work in the laboratory—in the field—modes of procedure—reduction of what is seen—the writing of a report a very important work—the three cases reported an excellent model to follow. Notice.—The semi-annual meeting of the United States Veterinary Medical Association.

Are Quadrupeds Subject to Hemorrhoidal Disease?—This question, which is addressed to the medical profession by Dr. W. Badenhamer, in the columns of the *New York Medical Journal*, calls, we think, for a word of reply at our hands, especially in view of the interest which attaches to the subject by reason of its bearing on veterinarian practice, and more particularly from the evident bias of the doctor in favor of the negative side of the proposition.

If we rightly understand the matter, the basis of this negative verdict is principally the fact of an authoritative dictum promulgated by Professor Gothier, of the Lyons Veterinary School some seventy-five years ago.

Having encountered cases in our practice of what we have considered true hemorrhoids, according to the definitions given by Dr. B., and having knowledge otherwise of reports of similar cases, we cannot avoid a feeling of surprise at the conclusions which have been reached by the author of the article in question, and we, therefore, proposed to ourselves an exploration of the regions of veterinary lore, with the design of discovering if possible, something in modern veterinary literature besides the archaic opinions of Professor Gothier. But the result of our exploratory labors has been a sad disappointment, and little, if any benefit has accrued to veterinary science therefrom. We do learn, however, that Professors Law, Robertson, Messrs. Blaine, Hill, Youatt, Bouley, Roll, Delwart, Cruzel and many others seem all to appreciate the fact of the extreme rarity of hemorrhoids in animals. It is indeed a fact that in the works of a portion of these writers the disease is not even mentioned, although it may be admitted that Hertwig, Mayhew, Williams, Percival, Steel, Armitage, Zundel, Pradal and Beugnot do mention or describe an affection similar to hemorrhoids. But it is still a fact that the positive recognition for which we were hunting, failed in all our reserches to materialize.

Shall we, therefore, agree with Dr. Bodenhamer's conclusion, and admit that there is no place among the pathological troubles of our domestic animals for hemorrhoids, and that they are quite free from the "*inflamed or relaxed condition of the hemorrhoidal veins and capillaries of the inferior* (or for our quadrupedal patients), *posterior portion of the rectum from some existing cause.*"

This is a question to the solution of which we think veterinarians ought to feel it to be their duty to contribute.

The subject is not without importance, first because of its general bearing upon the study of comparative pathology, and again, because of the strength of the proof which the fact might, as Dr. B. remarks, contribute to the argument in favor of the Darwinian theory of the origin of man.

Enzootic Bacterian Hemoglobinuria.—In the June number of the present volume of the Review, Dr. P. Paquin presented a paper in competition for the Review prize entitled "Studies of a cattle disease hitherto ill understood," known by the common name of Mad Itch, and for which term the author proposed to substitute that of "Enzootic Meningitis."

In our number for February we published a paper, read at the September meeting of the United States Veterinary Medical Association, in which our esteemed friend, Dr. J. C. Meyer, Sr., also used the name selected by "A Westerner," and this fitly supplemented the competitive paper of our prize candidate.

Subsequently we encounted amongst our exchanges the report of a paper presented to the *Academie des Sciences*, of Paris, upon a disease which not only bears some relation to that which has been treated by our American correspondents, but may be, in fact, identical with it.

Whether enzootic bacterian hemoglobinuria is the mad itch of our continent, we are unable to say, but as there is no danger of excessive information on the subject, we have thought the reproduction of the article in question might be of some advantage to our readers. If the microscopic lesions of the two affections should prove them to be the same, we shall be pleased to know the fact, and much gratified to have contributed our mite to the elucidation of the subject by calling the attention of our pathologists to the European discovery.

Meetings of Societies.—We have been honored on several occasions by invitations from the various Veterinary Societies, which are becoming more and more numerous in the different States, with invitation and solicitations to be present at their meetings, and it has been with deep regret that in the majority of cases we have been compelled to accompany our acknowledgments of the receipts of these kind invitations with the expression of our inability to avail ourselves of the opportunities thus presented, of becoming personally acquainted with many of our professional brethren. We speak truly when we say that our regret has been deep on these disappointing occasions, for in many instances we have not only missed the social enjoyment attending the gathering, but have been compelled to forego what we have considered to be a duty on our part, in failing to meet our brethren in the manner proposed. But even this consideration could not avail to prevent our inability from thwarting our inclination.

The stale and dilapidated pretext, which has almost become a joke, not as uncommon as it ought to be, of an "unexpected and imperative summons elsewhere," and the like, amongst busy practitioners, has not always been our excuse for declining an invitation, but the trouble has been oftener attributable to the lateness of the receipt of the missive of invitation, which has been delayed until the interval remaining before the time of meeting was quite too scant for the preparation required for a trip, perhaps to the remote East or the far West. And we believe that this is not only true in our own case, but that it is also a fact with respect to many others, and that societies like those which are located in Massachusetts, in Pennsylvania, in Ohio, and in Illinois, to mention only a few, are in the habit of transmitting their notifications, not only to their own members but also to others, at so late a period as quite to defeat the real and practical purpose of their transmission at all, much to the disappointment and detriment of every one concerned.

Veterinary societies are not available for good to the veterinarians of one State alone; they do not contemplate the creation of friendly feelings between merely a few practitioners of one small sub-section of the country; they properly mean the encouragement of acquaintanceship, professional intercourse and friendly relations *throughout the whole country*, between all of us who write ourselves brethren.

To remedy the difficulty in the way of securing a large attendance upon stated and other meetings, and to neutralize, if possible, the effect of the old stereotyped excuse of the "case of colic to attend," we now venture the suggestion, and urge the request upon all veterinary societies throughout the land, through their Presidents and Secretaries, to notify us of their times and places of meeting for the next year.

The matter will make a good subject for the introductory pages of our coming thirteenth volume, and we do not doubt that many of our brethren will be induced by a conspicuous reminder of the coming appointments, to add their presence to the meetings, who would otherwise suffer them to come and go in a listless and careless way, as they have too often done in the past.

SANITARY REPORTS.—We have frequently called the attention of our readers to the necessity and the consequent benefit which must follow the publication of the reports which describe the presence and progress of the outbreaks of contagious diseases which at times prevail in various sections of the country, as they may be observed by our State Veterinarians, as well as by private practitioners.

The advantage which would doubtless accrue from the publication of a strictly *American Sanitary Bulletin* are too evident to require any enlargement upon the remarks in which we have already indulged when treating this subject on previous occasions. We do not consider that our appeals have been entirely ignored, and cannot but believe that the reports which through the kindness of many veterinarians through the country, occasionally come into our hands, are the fruit of these repeated appeals. We are thankful for the few which we receive, but we think there is no good reason why the number should not be materially increased. The intelligence which we publish to-day, under the title of "Sanitary Extracts," illustrates the importance of the subject, even if we consider but a single one of the diseases referred to, glanders, for example. Evidently it is a more prevalent disease than many of us are aware of, and we believe that this prevalence may be largely attributed, in the words of the Cattle Commissioners of Massachusetts, to the fact that "*the law requiring persons who have knowledge of, or have reason to suspect, the existence of a contagious disease among any species of domestic animals, to make their information known to the proper authorities,*" *is too often disregarded.*

This language does not refer exclusively to glanders, but covers the entire category of communicable and epidemic diseases. We have in a number of the States and some of our large cities, good laws and sufficient sanitary regulations, but not a single one of them that will enforce itself. If it is applied, it must be by the carnal weapons of flesh and blood, and the moral means of vigilance and determination.

It is mere fatuity to be satisfied with recognizing cases of glanders, and ordering their destruction, if we do not also comply with both the spirit and the letter of the law, and faithfully report the discovery of every known case. We may, as individuals, resort to the proper measures to dispose of a glanderous patient, but we have omitted a duty, even in such a case, if we have failed to report the facts to the proper authorities. When such a course is generally adopted and faithfully persevered in, we may look for the enactment of good laws, and their efficient application, and the benefits of their enforcement will be shared by the entire community, but only then. The conditions must be fulfilled if the results are to be secured.

Reference Handbook of the Medical Sciences—Veterinary Post Mortem Examinations.—We have received from Dr. A. W. Clement, V. S., advanced sheets of this work, and have been well repaid for the time devoted to the perusal of its contents. Every veterinarian ought to read it and profit by its suggestions, for Dr. Clement has here presented a subject which we fear is sadly ignored and neglected by our veterinary pathologists. A post-mortem examination is seldom a work of which the details possess any attractive features, and very few persons are in haste to undertake a "job" of the kind, for that is what it is, though it is not always easy to discover whether the reluctance proceeds from the fact that it involves much labor of a disagreeable sort, or whether the secret aversion springs from a consciousness of one's incompetency to the expert and creditable performance of the duty. Dr. Clement's instructions in the method of proceeding are wise and practical. He divides the post-mortem into two classes—one of which includes such as may be made while the practitioner is furnished with the equipments and facilities contained in a regular laboratory at large establishments, provided with tables, "ad hoc;" the other, comprising those which are made "al fresco," in the field. But in both he shows the reader the best method of conducting his investigations; how to proceed step by step, from the first examinations of the cadaver to the external divisions of the various regions; then to the study of the different structures; of the organs of the abdomen; of the thorax and the cranial cavity. In the plan recommended and described by Dr. Clement, nothing can escape attention, and the result must be such a record of the post mortem as shall possess true value as a practical history of the lesions as they are found and their relations to the fatal result which has occurred. Veterinarians of to-day may learn much by the reading of the three cases which are recorded in the work. The proper preparation of a written report is not always a matter of easy accomplishment, and it is a part of veterinary education which, we are afraid, is much neglected in our American schools, notwithstanding the fact that it ranks amongst the most important of our professional duties. The record of an autopsy is a matter of too great importance to be loosely or incorrectly prepared. To the individual practitioner it may be merely a confirmation of a diagnosis, but if with it is connected the detailed report of a case, including the history, the cause, the symptoms and even the treatment, it then becomes a part of the practical knowledge and experimental evidence which form the material of which the science of positive pathology is composed, and enters at once into the mass of the facts which form the finished structure of medical science.

The brevity of our space forbids our entering into the minute consideration of Dr. Clement's contribution to the Reference Handbook, but we say without hesitation, that the merits of this part of the work alone are sufficient to entitle it to a place in the library of all veterinarians. Doctor Clement has given us to understand that he has in contemplation a publication on the same subject, enlarged into book form, and we hope, for the benefit of our friends, that he will not disappoint the expectation he has raised.

Notice.—The next semi-annual meeting of the United States Veterinary Medical Association will take place on the 19th, or the third Tuesday, of March, in Boston. The well known energy of Dr. R. Huidekoper, the President, furnishes [a sufficient guaranty of the interest and importance which will doubtless characterize the occasion, and we therefore hope that many members will profit by the opportunity to gather again in the well remembered place of meeting with which so many pleasant associations are connected. Notice of the meeting will no doubt be mailed in due time by the Secretary.

ORIGINAL ARTICLES.

TUBERCULOSIS.

A Paper read before the Massachusetts Veterinary Association

By J. F. Winchester, D.V.S.

Tuberculosis undoubtedly prevails among the domesticated animals over the entire globe, and has been well defined as a universal panzootic.

Its frequency depends upon various external influences as well as constitutional predispositions of different species and breeds. The centres of this malady are met with in the great centres of human population, and in these centres a large per cent. of tuberculosis is found in mankind.

This disease is of the greatest importance, since it has been induced experimentally in animals of different species, as carnivores, herbivores, and omnivores, by inoculation and feeding for certain periods tuberculous material from the lungs and glands of diseased subjects, as well as their milk.

Since man derives a great deal, and in some instances his entire sustenance, from the flesh and milk of animals around him, we can scarcely doubt that an intimate casual correlation exists between him and them with regard to the disease.

Tuberculosis has been demonstrated to be due to the bacilli of tuberculosis by Koch, and that the germ will re-produce itself innumerable times and retain its virulence. It will not multiply outside of the animal body except by artificial means, but it has been known to retain its activity in decaying sputum for forty-three days, and in air-dried sputum for 186 days. Death has taken place from the inoculation of the bacilli into susceptible animals as soon as ten days when introduced directly into the circulation, in five or six weeks when subcutaneously inoculated, and in from three to four months when associated with infectious animals. These facts have been well demonstrated by Koch in his numerous experiments. Animals that are not susceptible to this disease will succumb to the direct inoculation of large numbers of the bacilli. The period of incubation is an uncertain one, as will be seen from the results of the experiments made by Koch, varying as regards the amount of virus entering the system, and the susceptibility of the animal.

By artificial means this bacilli has been cultivated for eighteen months, through twenty-six successive breedings, and then found, by inoculation, to produce the morbid phenomena of tuberculosis, the same as when taken from an infected animal. This organism may gain its entrance into the system by circulation, from the mother, respiratory or digestive tracts, or through wounds on any part of the body. It has been well said that contagious diseases in general, and tuberculosis in particular, are very infrequent in habitations to which strange cattle are not admitted, and where vacancies are filled up by the home stock.

The development of the disease depends upon the surroundings, condition of the animal, the organ or tissue involved, and the amount of virus taken into the system. The first evidence of infection is an elevation of temperature, which often passes away in a few days unnoticed.

The general condition of the animal will depend on the progress that the disease has made so as to interfere with the functions of the body. This will vary from the appearance of perfect health to emaciation, with a rough, starey coat, and hidebound. Among other symptoms, there is an enlargement of the external lymphatic glands of throat, neck and flank, and usually associated with disease in some of the internal organs. Again, there is lameness without any evidence of external cause, swelling of the joints, contraction of muscles of the neck, and abscesses along the bones.

Cases often present themselves with a cough, more or less discharge from nostrils, hurried and labored respiration, or even difficult and audible respiration with a grunt. When the digestive organs are the seat of the disease, capricious appetite, bloating, tenderness on pressure, fæces soft or constipated, and in last stages thin and fœtid. The first evidence where the digestive organs are involved, the animal does not hold its own in flesh and general condition.

The udder is not infrequently a seat of the trouble, which shows itself in the form of small nodules or circumscribed mammiets, which do not yield readily to the treatment for garget, for which they are often mistaken. The nervous system is not exempt from its ravages, as seen in cases of paralysis or excitement, when the spinal cord or brain is affected.

The generative organs are not infrequently involved, as seen in nymphomania or continual bulling.

That the lesions of tuberculosis are not confined to any special tissue or organ, can be seen by the various symptoms it presents, as well as the different ways the virus may enter the system.

Of 200 cases that were inspected by Goring of Bavaria, in 88 cases the lesions were confined to lung and serous membranes; in 67 cases the lesions were confined to lungs only; in 33 cases the lesions were confined to serous membranes only, and in 12 cases where the disease was in other organs.

Again in 1,596 cases of tuberculosis, carefully investigated in the Grand Duchy of Baden, 21 per cent. with lung lesions only; 28 per cent. with peritoneal and pleural lesions only; 39 per cent. with lung and pleura; 9 per cent. with general tuberculosis; 3 per cent. with genital organs.

It is a well-established fact that heredity has an influence in its propagation, and it may be transmitted by the male as well as by the female. Notwithstanding the above fact, animals may be born from tuberculous parents without any predisposition to the disease, and multiply the same as if from perfectly healthy ancestors; still, the predisposition may be inherited from tuberculous parents.

That it is an infectious disease has been well established. As long ago as 1780, Dr. Wichmann, court physician at Hanover, stated that phthisis was transmitted when exposure to infection had been frequent or long-continued. The experiments of Villemin in 1864 caused him to come to the conclusion that tuberculosis was an infectious and specific malady, capable of being transmitted from one animal to another. From clinical observations tubercular phthisis is a contagious malady equal in infectiousness to glanders and contagious pleuro-pneumonia, and contagion plays a more active part in its propagation than heredity.

It has been accepted, that: 1. Tuberculosis has been observed in all warm-blooded animals submitted to domesticity or deprived of their liberty. 2. Tuberculosis presents analogous manifestations in man and animals in life and death, and the course and terminations are the same. 3. There are clinical observations which prove the transmission of tuberculosis from animals to man by the consumption of the milk of tuberculous animals. That it is not necessary to have the udder tuberculous in order to have the milk contain the bacilli of tuberculosis, has been demonstrated by Dr. Austin Peters of Boston, he having found the bacilli in milk from a tuberculous cow where the udder was in an apparently normal condition. Fleming cites a case where two young girls were fed upon milk from tuberculous cows, and died from tuberculosis; while their brothers, more fond of whiskey than milk were hale and hearty. In order to control this malady the diseased animals should be killed; everything that has been in contact with them thoroughly disinfected. Isolate all animals that are at all suspicious until positive symptoms manifest themselves. Never breed from an animal whose history is tainted, or about whom there is the least suspicion. As regards treatment, this disease has taxed the energies and defied the efforts of physicians for generations; and of what practical benefit could it be, since these animals are useless for breeding, dangerous for dairy purposes and as companions, and unfit for food. Our energies, therefore, should be directed towards prevention and eradication.

Having stated a few facts as to what the disease is, its cause, some of the prominent symptoms and the means necessary to combat it, it may be of interest to some to know to what extent tuberculosis was the cause of death in the human family in this State during the year 1886.

According to the Registration Report for that year, there were 39,040 deaths in this State, and of that number 7,329 died from tuberculosis, or 18.37 per cent.

From the twelve prominent causes of death, numbering 23,872, tuberculosis claims 30.7 per cent.

There were 11,772 deaths under five years of age that year, and of that number 1,372 were from tuberculosis, or 11.68 per cent. Excluding all deaths under five years old, than tuberculosis claims 21.88 per cent.

That this disease exists among the dairy stock of this State, a few facts gleaned from Drs. Penniman of Worcester, Osgood of Springfield, Bunker of Newton, Peters and Saunders of Boston, besides a few of the individuals who have suffered a loss of cattle, establishes the fact.

An examination of forty-nine herds, in different parts of this State, or 1,110 animals, shows that on thirty-four farms, where 866 bovines were kept, 239 were killed, and the examination after death sustained the diagnosis of tuberculosis. Besides these 239 that were killed, 189 presented symptoms that would cause them to be looked upon as suspicious. On the fifteen other farms, where 244 bovines were kept, twenty-eight presented symptoms that indicated tuberculosis, but none were killed to sustain the diagnosis; and besides these there were nineteen suspicious cases.

Having obtained the consent of a few gentlemen that have suffered a loss of cattle from this cause, I present the history of those outbreaks, and the rest I specify by numbers.

In the spring of 1887, at the request of Mr. Jacob C. Rogers, Dr. Austin Peters and myself made an examination of the milch cows at his farm in Peabody. There were a number of animals that presented the symptoms of tuberculosis. An inquiry into the history of the cattle kept on this farm revealed the facts: that some years previous to this the herd of Jerseys and grades owned there had had the disease, but to what extent not known; these were disposed of about the year 1878, with the exception of one cow, which afterwards died of milk fever. For two or three years the number of cattle on the farm was limited. When the farm was stocked again it was with Guernseys, and no evidence of disease was manifested in his stock until the year 1883, when a cow, recently purchased, dropped a bull calf and then gradually failed until she died, and an examination showed the lesions of general tuberculosis. In 1885 this bull was killed, and an examination presented the same lesions as found in his dam. From that time the malady steadily gained ground, until, in the spring of 1887, all the cattle on the farm, with a few exceptions, had been killed or otherwise disposed of, and the barn was then fumigated. Not suspecting that this trouble was infectious, new animals were added to the herd after killing the bull, in 1885, and in one instance a bull was bought in November, 1886, and in June, 1887, he was killed, and the post-mortem showed the lesions of the disease. This bull came from a farm where tuberculosis had never been known to exist. Thinking that the disinfection of the barn had been such as to remove all traces of the disease, Mr. Rogers, in May, 1888, purchased in Vermont six cows that were healthy and from a farm where tuberculosis was not known to exist, and put them in the barn from which he had taken the diseased animals. In December, 1888, only two of these animals remained in an apparently normal condition; the others, having developed the symptoms of tuberculosis, had been taken away. The forty-four animals on the farm, including the six from Vermont, had been killed or otherwise disposed of.

In December, 1884, five Guernsey cows were brought to the farm of Mr. F. L. Ames in North Easton, and in August, 1885, a bull of the same breed. During the winter of 1887 this bull began to fail, and in April of that year he was examined by Dr. J. S. Saunders of Boston, and the diagnosis of tuberculosis was made, when he was killed, and the autopsy showed the lesions of tuberculosis with phthisis.

In May of the same year, after an examination of the herd (thirty-six animals) by Dr. A. Peters of Boston and myself, ten mature animals and four calves were killed. Six of the cows were Ayrshires, and the others Guernseys. The calves were killed as they were sired by the bull killed in April, and the others as they presented symptoms of tuberculosis, which were sustained by the post-mortems. The following December, four more, three Ayrshires and one Guernsey, were disposed of by death for the same reason, making in all up to date nineteen herds.

Of the imported Guernseys, three cows and the bull were killed, one cow died from the effects of calving, and one remains. Previous to bringing the Guernseys to the farm the stock was all Ayrshire, and there is no history of a sick animal other than due to calving.

LENOX FURNACE, MASS., Oct. 30, 1888.

J. F. WINCHESTER, D.V.S.

DEAR SIR:—In reply to yours of 27th, would say, we have killed thirty-two head of cattle, all showing conclusive evidence of having tuberculosis. This comprises the entire herd. The stables have stood empty since some time in June, and have been thoroughly washed with a solution of crude carbolic acid, and afterward whitewashed.

On November 15, 1887, eight cows and heifer were sent here from Palmer, Mass., one of which was a mere skeleton, very weak, coughed hard whenever moved, coughing up quantities of soft yellow matter. She stayed with the other cattle for three weeks or more, and was then condemned by a veterinary surgeon and ordered killed. Along in March I noticed several of the other cows coughing, and by the 1st of May most of the cows were coughing and losing flesh rapidly, although well fed, and before long not an animal was exempt. Numbers of them (eight I think) were opened by Dr. Geo. N. Kinnell of Pittsfield, and all killed were slaughtered after being condemned by him. We killed twenty cows, three yearling heifers, one yearling bull and eight calves. Ten of the cows were five years old or over, twelve animals under two years old, all but one high-grade Jersey or thoroughbred Jersey. So far as I noticed, the age had little to do with the severity of the disease, as calves of two or three weeks would cough quite as hard as the cows. Many of them, old and young alike, got so sore from coughing that they seemed to suffer greatly from each attack. The cattle were fed through the winter on ensilage in morning, hay at noon, and ensilage at night. Wheat middlings fed on ensilage twice per day. Were turned out to water once each day. When once the disease got started with a cow, she would eat everything within reach,—weeds, stubs and all,—and she was constantly hungry. One cow was killed within a few days of calving, and the lymphatic glands and the intestines of the calf in others were plainly blotched by forming tubercles. I am sure that I have answered your questions as fully as you may desire, but will cheerfully give further information at any time.

Yours truly,
HENRY J. WASHBURN,
Agent Lenox and Stockbridge Land Co.

LENOX FURNACE, MASS., Dec. 12, 1888.

J. F. WINCHESTER, D.V.S.

DEAR SIR:—At the time of the arrival of the cows from Palmer this farm had twenty cows and three yearlings on it. In former years it commonly carried forty to sixty head of all ages, but owing to a change of ownership in May, 1887, the number had been reduced. I was born and brought up on this place, as well as were my father and grandfather, and I never knew of or heard of the existence of a case of tuberculosis in the town until the arrival of one from Palmer in November, 1887, and can therefore safely say that none ever existed here before.

Yours truly,

HENRY J. WASHBURN.

During the year 1885 Mr. C. S. Emerton of Peabody restocked his farm, having during the previous year sold all the cattle then on the farm. He would occasionally have a cow run down, and dispose of her, but gave little or no heed to the trouble. During the fall of 1887 several failed in their milking qualities, and did not clean after calving. This led to an examination of the cows, and tuberculosis was found to exist. Those that presented the symptoms of this disease had been in the herd from a few months to as many years. Not responding to the grain given them, and gradually losing flesh, nineteen mature cows and all the calves raised on the farm were killed, and an examination after death showed the changes due to tuberculosis. In the spring of 1887 a bull was bought in Vermont, and in the fall he was killed, having well-marked symptoms of the disease. These animals were grade Holsteins and natives. The result of this outbreak was that all the bovines on the farm were either killed or disposed of otherwise, and his loss has been his entire herd, or forty head, during the past few years.

In the spring of 1887 Dr. J. Penniman, V.S., of Worcester, was called to a farm, and while there noticed a cow that was coughing, thin in flesh and apparently diseased with tuberculosis. On making inquiry about her, he learned that she had been coughing quite a long time and had not done well. This led him to note the condition of the others, and in a short time he heard nearly all the rest of the herd cough. Within a few days he was called to make a post-mortem examination of an animal, and on arrival found the cow dead about which he had made inquiry, and the examination revealed general tuberculosis with phthisis. In a few weeks from this time the owner desired him to make a critical examination of all the cows on the farm, numbering seventeen head of grade Jersey, Ayrshire, Shorthorns and Devons.

The result of the examination was that a two-year-old heifer that stood beside the cow that died, had a bad cough, disease of the lungs, and enlargement of the external lymphatics, and death was recommended. Another cow, where the symptoms of the disease were very marked, was killed, and the post-mortem showed a similar condition of the internal organs as the one that died. Among the lot was a fine-looking cow, in good flesh, that was heavy with calf, and soon after calving she died from milk fever, and an examination of the lungs found them diseased and broken down in places. The rest of the herd, with one exception, were coughing with more or less lung disease, and the owner was advised to fatten them, and if inspection, after slaughter, showed them free from disease, to be sold.

Soon after this he was called to another farm to see a cow that had been ailing for some time, and she presented well-marked symptoms of tuberculosis, which an examination after death sustained, having general tuberculosis and phthisis. In about six weeks from this time another cow which had been gradually failing died, and the post-mortem showed similar lesions of tuberculosis as the first cow which was killed, only to a greater extent. A third one was soon killed for the same trouble, and in the barn where these three had been kept nearly all were coughing, although they had the general appearance of health.

Another case of interest is that of a gentleman in Worcester who kept a cow or two to supply his own family with milk, and also some of his neighbors. He had been supplying himself and neighbors for a year or so when he called the veterinarian to one of these cows. The doctor found a mature animal, thin in flesh, temperature 104 degrees F., unmistakable lung lesions, coughing, hurried respiration, but with a good appetite, and giving a good quantity of milk. Death was recommended, and autopsy showed tubercles in all stages of development in the lungs. In about one year was again called to the same barn to see a cow which was showing similar symptoms, and she was a daughter to the one alluded to above. She was killed, and autopsy showed similar conditions as the dam. A year or two more passed away and the doctor was sent for again, and another was found with the same symptoms as the two preceding ones; this one a descendant of one of the others that were killed. The owner was selling the milk as usual for the children of the neighborhood, and he must have been aware that his course was little less than criminal, as he had been told the nature of the disease. He promised to have this cow killed, but he sold her for fifteen dollars to a gentleman some twelve miles out of this city, as a wet nurse for thoroughbred calves. The doctor sent word to the gentleman of the possible results if he persisted in feeding that cow's milk to calves, and again recommended death. Some months after this it was learned that the cow was not killed, but again sold for fifteen dollars, and soon after this she began to run down so fast that she was sold for the last time as a live animal for fifteen dollars to a Worcester firm, to be manufactured into bologna sausages.

The doctor cites a case of a herd of thoroughbred Jerseys within seventeen miles of Worcester, where the entire herd was killed and buried, and the barn thoroughly cleansed and disinfected. Although he does not believe it affects every herd within a radius of ten miles of Worcester, he has occasionally found it not only in the city but in almost every adjoining town; and he has no doubt but that it lurks insidiously in many a herd, and perhaps the owners may be ignorant of the fact, but he is quite sure some know they have it and keep very still.

HERD.	Bovines on Farm.	Killed.	Suspicious.	Percentage Killed.
No. 1	70	8	8	11.42
2	2	2	–	100.00
3	57	5	–	8.77
4	50	1	8	2.00
5	12	1	3	8.33
6	12	2	1	16.66
7	4	1	–	25.00
8	90	12	78	13.33
9	34	2	3	5.88
10	36	19	–	52.91
11	32	32	–	100.00
12	61	1	36*	1.65
13	14	8	–	57.14
14	5	2	3	40.00
15	4	4	–	100.00

Herd.	Bovines on Farm.	Killed.	Suspicious.	Percentge Killed.
16	7	2	5	28.57
17	30	4	2	13.33
18	5	4	1	80.00
19	25	7	2	28.01
20	35	6	–	17.18
21	2	1	–	50.00
22	1	1	–	100.00
23	1	1	–	100.00
24	8	3	–	37.67
25	28	4	–	14.28
26	30	4	–	13.33
27	44	30	14†	68.49
28	23	6	–	25.84
29	17	5	–	29.41
30	2	1	–	50.00
31	17	4	12	23.52
32	48	6	3	12.50
33	40	30	10†	75.00
34	20	20	–	100.00

*Eleven otherwise disposed of.

†Disposed of otherwise.

Herd.	Bovines on Farm.	Symptoms of Disease, but none Killed.	Suspicious.	Percentage that showed Symptoms of Disease but none Killed.
No. 1	24	2	–	8.33
2	13	2	–	15.38
3	12	1	–	8.33
4	8	–	–	–
5	38	1	2	2.63
6	15	2	1	13.33
7	11	2	6	18.18
8	7	–	–	–
9	30	2	3	6.66
10	28	2	3	7.14
11	15	1	–	6.66
12	11	2	2	18.88
13	12	6	2	50.00
14	3	2	1	66.00
15	17	3	4	17.66

Note.—The writer has been indebted to Dr. Koch, Dr. Fleming and Dr. Walley, for certain of the facts presented in the foregoing.

(Signed)

J. F. Winchester, D.V.S.

ENZOOTIC BACTERIAN HEMOGLOBINURIA OF CATTLE.

By M. V. Babes.

This disease is enzootic in Roumania, especially in the low and marshy lands lying along the Danube, and has often been mistaken for rinderpest. But after the elimination of that scourge from the Roumanian territory, the other disease remains refractory to all sanitary measures. In some localities it makes its appearance with regularity every summer, and spreading from these centers, its course is marked with great and widely diffused mortality. There have been years when from 30 to 50,000 head of cattle (oxen) have been carried off. Its effects are lighter upon cows, and calves do not suffer from it. The author has seen badly kept wells which formed the center and produced the nuclei of infection. The disease is of but few days' continuance. The symptoms are prostration; loss of appetite; difficulty of locomotion; high fever, with accelerated pulse and respiration; reddish and albuminous urine, often containing hemoglobine; in some cases constipation, and in others diarrhœa and tenesmus. At this point many animals recover from the disease. Others, more numerous, continue to lose flesh and strength and remain prostrate, while the febrile symptoms increase, the urine becoming dark red, almost black in color; muscular twitchings occur; an abundant flow of tears takes place, and there is some sub-cutaneous œdema. The post-mortem reveals a slight hyperemia of the pharynx and larynx, with congestion, catarrh and echymosis of the gastro-intestinal mucous membrane.

The small intestine often contains a large quantity of reddish brown liquid and hemorrhagic nuclei, with loss of substance of the mucous membrane, due to the *pentastoma denticulatum.* The mucous coat of the large intestines is often ecchymotic, and covered with a gelatinous mucus, its cavity containing dry fœcal masses. The follicles of the intestines are slightly altered, and the sub-peritoneal tissue, where the intestinal lesions exist, is œdematous and hemorrhagic. The peritoneal glands are swollen, injected and soft. The peritoneal tissue is always hemorrhagic and œdematous. The kidneys are large, soft, and red or blackish in color. The mucous surface of the renal pelvis is ecchymosed and covered with a yellowish mucus, and the bladder is always filled with a dark reddish urine. The liver is enlarged, pale, marbled and soft, and the spleen swollen and blackish, and its pulp softened.

There is always present a characteristic bacteria, round, very small, divided in two by a median striæ, and often, in four, transversally by another. This microbe, which resembles the *gonococcus*, often forms *dipplococci.* It colors with the aniline bases, and imperfectly with the method of Gram, and is discolored if heated by alcohol. It is easily seen in the dried preparation, or upon sections colored first with the blue of Loeffler, and then with a concentrated alcoholic solution of the same color, and again with aniline oil and xylol. If colored with the violet of methyl, it is larger and has a square form, the two individuals forming the *dipplococcus* being united at their angles by a thin thread.

In the heart and blood vessels they are free, adherent to the red corpuscles, or situated inside of them. In the hemorrhagic œdema, and in the kidneys, they are more numerous, and their presence in the red corpuscles is then easily made out. The red corpuscles are, however, altered, and become less colored and less resisting. Upon section of the stomach, and especially where the ulcerations exist, the superficial necrosed tissue will not color. Numerous bacilli of various kinds are found in the glands. The diplococci are in the dilated superficial small vessels, which are filled with them. In the mesenteric glands, large masses of bacterias, smaller than those of the blood vessels, form a plasmatic network, in groups of four or more individuals. The liver, usually, is free from bacterias. In the central parts of the lobes, the hepatic cells are homogeneous and yellowish, and the introlobular capillaries are full of broken cells, highly colored. The pulp of the spleen contains many large cells, filled with yellow pigment, and the bacterias are often found in the center of the red corpuscles, and at the periphery of the blood vessels. The capillaries of the kidneys and the glomerulae are much dilated, and while they do not show intact red corpsucles, they are full of bacterias which are surrounded by a peculiar zone. The protoplasm of the epithelial cells of the tubes is yellowish, and often filled with pigment. The nuclei are but little colored, and often have disappeared. The tubes contain granular masses, highly colored. Bacterias are abundant in the small arteries and capillaries of all the other organs, and in the muscles.

A healthy ox inoculated with a small quantity of the blood of a sick animal is not affected by it. Feeding an ox with the products of the disease gives rise only to a temporary indisposition, with little fever. Inoculation with the blood, the fluid of the œdematous swelling, the urine, or the cultures of the microbe, to ewes, pigs, cobayas, chickens and pigeons is without effect, while rats and mice are more susceptible to it. The rabbit, however, is still more susceptible to it, and is made sick by the same inoculation, a high febrile condition supervening which often proves fatal. The post mortem reveals hyperæmic œdema and ecchymosis of the peritoneum and of the walls of the intestines, with diarrhœa and fibrinous pericarditis and pleuritis. Bacterias are found in the small vessels, especially those of the liver. In the exudates and the œdemas they are found enclosed in globules resembling altered blood corpuscles.

These bacterias are undoubtedly the pathogenic agents of the disease in cattle, though so far their inoculation has failed to prove it.—(*Journal des Soc. Scienti.*)

DIAGNOSIS OF GLANDERS WITH OLEUM TEREBENTHINŒ.

By Dr. J. Serling, (Berlin).

Professors Vogel* and Anacker† have called the attention of veterinarians to the use of ol. terebinth, by subcutaneous injection, as one of the means of diagnosis in cases of suspected glanders. The theory propounded is that the article possesses the property of converting a case of latent or chronic glanders into a well-defined acute case of the same disease. My object in relating the following case is to encourage veterinarians in the use of hypodermic injections of ol. terebinth in doubtful cases, and thus to shorten the long term of time during which the affected animal may continue to be a source of danger to other animals.

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*Repertorium, 1888, s, 59.

†Thierarz, (1887).

In May, 1888, I was called to see a bay horse, which had been bought the preceding January, and had been taken sick in February with severe bronchitis, from which he had made a good recovery, with the exception of a slight cough.

In April he became lame, and was in that condition when I was called, having also a cough accompanied by a nasal discharge. When seen in May, I found him a strong, five-year-old horse, with every external appearance of health—skin smooth, hairs glistening, no sores, the glands free from enlargement, pulse, respiration and temperature normal. Percussion of the chest failed to detect anything wrong, though auscultation on the left side gave evidence of louder breathing there than on the right. The cough of the animal was painful, strong and convulsive, and could be readily developed by pressure on the throat. The septum nasi was clean, and nothing abnormal could be detected by minute examinations with the use of the speculum nasi and reflected light. The discharge was of a greyish color, of firm consistency and of rather offensive smell, and was more abundant from the right than from the left nostril. It was much increased when the animal hung his head down to the floor. Eating and drinking were performed in a perfectly natural manner. As far as the lameness was concerned, it was well marked in trotting or going up hill, but diminished when moving on level ground. My diagnosis was chronic laryngitis and shoulder lameness.

The treatment to which the horse was submitted for about three weeks, was followed by good results, and the cough and the discharge disappeared. The lameness, however, remained unchanged. I decided to treat it by strong counter irritation, and with that view proceeded to inject four grammes ol. terebinth in the shoulder of the lame leg under the skin.

On the night when he received this treatment he was taken with violent dyspnœa, which lasted intermittently for some time. On the following day his pulse was weak at 64, with temperature at 107° and respiration at 30. The discharge from the nose had returned, and was mixed with blood. The septum membrane was clear, the throat very painful, the cough weak, repeated and always followed with symptoms of choking. Three days later he died.

At the post-mortem I found the mucous membrane of the larynx much swollen, and covered with ulcerations; the trachæ, at about three centimeters from the bifurcation of the bronchia, also showed a number of them. The left lung contained a crop of abscesses, some in a state of suppuration and others filled with matter of a calcareous appearance. The liver and the spleen also contained a number of them. All these were evidently lesions of glanders. If now we take into consideration the history of this case, the symptoms presented and the changes that followed the use of ol. terebinth, I think that we have confirmed the results mentioned by the German professors, and that the process is well worth the trouble of further test and experiment.

AN INTERESTING DETAIL OF EXPERIENCE WITH DISEASE IN THE WEST.

SPASMS OF THE MUSCLES OF THE EPIGLOTTIS—A TERRIBLE DISEASE AMONG STALLIONS.

By George S. Witter.

(*From the Breeder's Gazette.*)

There is a disease termed by veterinarians spasms of the muscles of the larynx or spasms of the muscles of the glottis and epiglottis. The larynx is an irregular cartilaginous tube forming the upper extremity of the trachea (or windpipe) and is the organ that produces the sound called neighing; the glottis is the upper part of the larynx, and the epiglottis is the lower part, or lid, which opens and closes the larynx; therefore, I call the disease "spasms of the muscles of the epiglottis" because it is the contraction of these muscles that causes the larynx to close. When a horse is affected with this disease the larynx becomes partly spasmodically closed, and sometimes entirely closed, but when the latter occurs death follows immediately. In the following five cases of this terrible disease which have occurred in our herds, I will endeavor to explain every symptom, and the treatment of each case, hoping that it may prove of value to some of your readers, and that some of them can enlighten me on the proper way to effect a cure or show a cause for the disease.

In the fall of 1886 I was engaged in moving our horses from our summer range onto our winter range when I noticed that one of our stallions was sick. Whenever he would attempt to run he would take a spasm that would almost close the larynx; he would stop, stretch out his head on a line with his back, stagger around and sometimes fall to the ground in his struggle for breath; in performing the act of respiration he would make a noise almost like the bawl of a bull. I decided the case to be that of "spasms of the muscles of the epiglottis," and so left him and drove his mares down on the winter range. I went back after him the next day and found him up and looking well. He was a grade Percheron, had never been halter-broken and was very wild, so I had to drive him to the ranch, which was about ten miles distant. About the first three miles was all down hill and he traveled that distance with as much ease as any horse could, but just so soon as we started up hill he commenced to show signs of a spasm, and before we reached the top he took a spasm. He stood on his feet struggling for breath for about five minutes, and then fell to the ground and stretched out his legs, which quivered like those of a horse that is being choked with a rope and is too much exhausted to struggle any more. I saw at a glance that if he was not relieved in some way he would die in a very few seconds, as respiration had entirely ceased, so I took my pocket-knife and performed the surgical operation called trachetomy. This is done by making an opening into the trachea at about eight inches below the angle of the jaw and inserting a tube in the same. Just as soon as my knife entered the trachea he showed signs of life, and in two minutes was on his feet. I did not get the tube fastened in because he became frightened at seeing me standing by him trying to secure the tube, and ran away. It was now dark, so I went home, leaving him, as I supposed, to die. I went back after him early next morning and found him about one-half mile from where I left him, or he left me rather. He looked perfectly well, except the gash I had cut in his neck made him look like he had his throat cut. He had traveled in the right direction, so he was on the hill that had caused his spasm the night before. The first mile we had to drive him was all down hill, and he took a fast trot and kept it up to the bottom. The next half mile was up hill, and I would have to stop every little ways and let him rest and get his breath. He did not choke down because when the larynx would close entirely, air would enter the lungs through the opening in the trachea. From the top of this hill it was all down grade to the ranch, and we got him into the corrals without any further trouble. I got him halter-broken without another spasm, and turned him loose in our stock-yards, to keep him until I could have a stable completed where I intended to keep him. In catching him to take him from the stock-yard and put him into the stable, he took another spasm and choked down and straightened out as before. I cut the old opening (which had partially healed up) open again, and the effect was the same as before. I did not fasten the tube in because I did not have a tracheotomy tube, and the only thing I had was a small brass tube, and I was afraid of blood-poison. He got along nicely after this spasm until some time in January, which was about two months and a half after he had the first spasm. Then he took what I call the "Texas itch." He began to get poor and broke out all over. I decided to use a dope with which I had successfully treated over two hundred mare. In doping him he took his fatal spasm. He stood on his feet for about fifteen minutes, biting, striking or kicking whenever I would go near him; then he fell to the ground with his head drawn down between his fore legs, and before I could straighten it out he was dead. I cut out the larynx, trachea, and lungs, and found them to be in a perfectly normal and natural condition. I was not satisfied with my examination, so I took them to Meeker and had a surgeon examine them, and he said that they were perfectly normal, and that the disease was entirely spasmodic.

In the summer of 1887 we had another grade Percheron three-year-old stallion die with this same disease. He died on the range, so I do not know very much about his case. I only know that the symptoms were the same as in the above case. The same summer we had an imported Percheron stallion, four years old, die with this disease. This horse had been kept in the stables and had not been used for breeding purposes for over a year. Prior to the time he took this disease he had what I call "equine chorea" (St. Vitus dance); it was different from string-halt and almost like chorea in the human family. If he was surprised in any way, or if spoken to quick or sharp, he would dance back and forth in his stall, most generally crossing his front legs, and jerking his hind ones up similar to that in stringhalt. In stringhalt only the posterior limbs are affected; but this horse was affected in every leg alike, and I have often noticed the muscles twitch on different parts of his body. This horse being subject to this nervous disease, which I have just described, it might be that it located itself in the muscles of the epiglottis and caused spasmodic action of them. In the other two cases, and in two more that I will hereafter describe, I am entirely ignorant of the cause, as will be seen later.

In the fall of 1887 we had another stallion take this disease, which I have called "spasms of the muscles of the epiglottis." This horse I brought in off of the range and took good care of him, but did not try to cure him in any way. He had his last spasm about last Christmas. I turned him out on the range with a bunch of mares last spring, and he has not shown any signs of a spasm since.

Last August we had another stallion take this disease. He is in our stables now. He has had a number of spasms since we took him up, but generally they are not so hard as in the other four cases. On the 16th of last month he took a severe spasm that lasted fully thirty minutes; the sweat ran off of him in perfect streams; there was a green froth came from his mouth, and he seemed to be in terrible pain. At the expiration of thirty minutes I performed the operation of tracheotomy on him, and he was immediately relieved. I performed the operation without casting him, as he was perfectly gentle and of a kind disposition. I was unable to secure the trachetomy tube that I have, so that when the head was changed from a low to a high, or a high to a low position, the muscles and membranes in passing over the trachea (as they do when a horse changes the position of his head) would not pull it out of the opening cut in the trachea, so I was compelled to leave it out. At this writing the opening cut in the neck has entirely healed up, but he still has spasms. I feel confident that if I could get a tube that could be kept in, this alone would effect a cure.

In addition to symptoms heretofore stated, they most generally cough while drinking water; it prevents them from neighing even if they are not in a spasm, and the least excitement or exertion of any kind is apt to cause a spasm.

This disease does not affect their appetite in the least; they will remain in good flesh, or if thin, when stabled, they will get fat if fed plenty. They always seem to feel well except when in a spasm, and I have seen them cause a spasm by playing in their paddocks. It is not contagious, as the horses that have had it have not been running together, and the mares and gelding that have been running with them have not shown any signs of the disease.

There are various kinds of acid poisons that would cause spasmodic action of the muscles of the epiglottis; but this could not be the cause, because even if there is any weed that they would eat that contained these poisons, it does not seem probable that only the stallions would eat it, and then it will be remembered that one of these stallions never ran on the range. The altitude where these horses ranged is about 8,000 feet above sea level; but I cannot see why the high altitude should affect the stallions and not the mares, as most of the mares came from Texas and two of the stallions that died were Colorado range-raised horses.

It will be seen by the above that I am entirely ignorant of the cause of this terrible disease which locates itself in the most valuable horses of our herds, and most generally carries them away in a very short time. I have not known of another case in Garfield County, or in fact in the State of Colorado, or the Territory of Utah, where I have been interested in the horse business. I have tried several different kinds of anti-spasmodic liniments and medicines, but to no good effect, and the only relief I have found is the operation of tracheotomy which I have heretofore described.

It will be seen by the above that I only performed this operation on two of the affected horses; this was because I was not present when the others took their fatal spasm. Had I been there I would have most certainly performed the operation, but I did not like to do it unless I found it to be absolutely necessary to save a horse's life, as most horses would have to be cast or tied secure in some way, and this would be sure to cause a spasm.

There is no danger in performing this operation, as the jugular vein and "common carotid artery" lie above the trachea at eight inches below the angle of the jaw and do not come to the lower part of the trachea or surface of the neck until they reach the angle of the jaw.

SNAKE BITE AND ITS ANTIDOTE.—VII.

TREATMENT OF SNAKE BITE.

By H. C. Yarrow, M.D., Curator Dept. Reptiles, U. S. National Museum.

(*From Forest and Stream.*)

(*Continued from page* 509.)

Can we now, in view of the results of our experiments propose any plan of treatment for snake bite which will afford reasonable ground for a belief that danger may be averted and human lives spared? It is thought the question may be answered in the affirmative, especially as regards those persons bitten by North American species of poisonous reptiles, and the following suggestions are offered with the earnest desire that they may realize fully the hopes of the writer.

What shall a person do who is bitten by a venomous snake? The first advice to give is that he or she should not lose presence of mind, and become so nervous as to be incapable of cool and deliberate thoughts. If the bite is upon one of the lower limbs or upon the arms, a broad bandage of unyielding texture, if possible, should be placed tightly around the affected member, and between the bite and the heart, and be securely fastened. This bandage or ligature can be made by tearing up a shirt and using two or three thicknesses of the material, an inelastic suspender will answer, pieces of a handkerchief may be used, or if in the woods, a strip of bark from a sapling can be hastily slit off and applied. A leather strap or thong is better than anything else, but even long grass rolled together so as to form a cord may be used in an emergency. In applying the band or ligature of whatever nature, it should be started about six inches above the bite and the turns made to run downward toward the puncture, and should be wrapped so tightly as to cause the injured limb to become turgid with venous blood. Having fastened it securely, a number of cross cuts should be made through the points of the puncture from the snake's fangs, deep enough to pass down into the muscular tissue, taking care to avoid veins which will be seen standing prominently forth, and bleeding from the cuts can be encouraged by rubbing the limb gently up and down below the ligature. A wide-mouthed bottle or similar utensil, from which the air has been driven forth by burning some whiskey or a piece of paper in it, should be applied to the wound and it will act as a cupping glass; or still better, let the bite be sucked by the patient himself, if he can get at it, or have some courageous friend with a healthy mouth perform this act for him. The pulse should be felt, and if it weakens, showing that possibly a portion of venom is reaching the general system, notwithstanding the constricting band, whiskey should be given in moderate quantities. From time to time the band should be slightly loosened and then replaced so as to admit of partial circulation, but as the heart flags, the stimulant must again be administered. It is no use to make the patient drunk, for alcoholic liquors are not antidotes; in any sense they simply act as a tonic to the failing circulation.

The writer has been informed by a gentleman, long resident in Texas, that the plan proposed has been constantly employed in that State; and that few deaths result there from the bite of venomous snakes. Of course it will be understood that these suggestions are intended to meet sudden emergencies, and not to take the place of treatment by intelligent bystanders or physicians. Under all circumstances the ligating band should be first applied and the incision made, and then if circumstances will admit the following procedure, it is thought, will be the best. Cupping glasses should be applied over the wound, after which a 20 per cent. solution of permanganate of potassa should be injected with a hyperdomic syringe directly into the wounded tissue and retained there by means of the finger or compress. The flesh should also be kneaded so as to distribute the solution through the tissues in the immediate vicinity of the bite. In addition the patient should be made to swallow 20 minims fluid extract of jaborandi, or its alkaloid, pilocarpine, may be used hypodermically. If the venom appears to be gaining ground another injection of the permanganate may be given, followed by more of the jaborandi, or pilocarpine, but the latter drug should be suspended when it is found the patient is perspiring freely and when excessive salivation is produced. Carried too far this remedy would weaken instead of strengthening the heart. Whiskey or brandy may also be used in limited quantities from time to time. In the absence of any of the means suggested in the way of remedies the primary fact to keep in mind is the importance of the ligature, incision or scarifying the affected part, and the promotion of a free flow of blood. If nothing can be found to use as a cupping glass and no one is courageous enough to use the mouth, the old-fashioned country remedy of splitting open a live chicken and applying it over the wound may be tried, or, as has been tried in India with success, the anus of a chicken may be applied over the wound, using a number of different fowls for the purpose. The writer recommends these methods only because there is undoubted evidence of their efficacy. A piece of porous clay might be applied, as it would doubtless act in the same manner as did the snake stone in our experiments. It is very important to remember that the ligature or constricting band cannot be allowed to remain very long, as gangrene would inevitably result; it should be loosened from time to time so as to admit of a slight circulation through the affected part, and to permit a small amount of the venom only to enter the system, and the effect of this should be met by the administration of the remedies already indicated. In the case of a rapidly weakening heart, tincture digitalis in 15 drop doses might be given every two hours, or, if at hand, a few drops of nitrate of amyl might be inhaled. Everything failing it might be worth while to attempt artificial respiration, in the hope that if life could be prolonged the system might throw off the poison, as it has been shown by the Indian Snake Commission that the action of venom is actually delayed by this method. In one case mentioned by Vincent Richards $\frac{1}{4}$ of a grain of cobra venom was injected into a dog. "It took four hours and ten minutes before the animal appeared to be dying, until artificial respiration was resorted to. In four minutes more in the absence of this system this animal's heart would have ceased to beat and somatic death been completed. But by its steady application life was extended to forty-one hours and fifty-two minutes. In a desperate case there should be no hesitation in trying the effect of artificial respiration.

Before leaving the subject of snake bites it seems proper to allude to a matter which of late has received some little attention, viz., the preventive inoculation of serpent venom to prevent danger from bites, and while the writer does not commit himself to the theory he believes it may be worthy of serious consideration. As has already been stated in this paper, the Ann Arbor experiments showed conclusively that after a time with repeated inoculation of venom the animals experimented upon seemed to be much less susceptible to its effect, and quite recently an individual has been visiting the principal cities claiming an immunity from snake bite, on account of an inoculation performed on him by some South American Indians, and offering to have the matter tested upon a large dog, which had also been inoculated. It has been stated that in Philadelphia these experiments were successful. Tschudi informs us that some of the South American Indians are said to acquire an immunity from snake bite, having been previously inoculated, but the process has to be repeated from time to time. In this connection the following extract is given from the *Veterinarian* Lond., 1887, LX., 565, as it seems to bear the impress of truthfulness. "Three of the oxen were bitten by snakes. One of the bushmen undertook to cure them, and taking a knife made one or two slight incisions round the place where the bite was, which was easily seen by swelling, and rubbed in a powder which he said was made from the dried poison sacs of another snake. In a few hours the poison had entirely subsided and the cattle were as well as their half starved state would allow them to be. I expressed some doubt whether this cure would be efficacious in the case of the more deadly kind of snake, but the bushman assured me that it would, and that he was not afraid of being bitten by any snake in this country so long as he had the poison sac of another snake to use as an antidote.

"The very next day I had an opportunity of putting him to the test. While walking ahead of the wagon I saw a full grown capell or spunghe slange lying under a bank, and calling the bushman said, 'Catch that snake alive. You are afraid of it, are you?' 'No, boss,' he replied, 'I am not afraid, and will catch it for a roll of tobacco.' Not wishing to be accessory to his death, I refused to bribe him, and went to get the driving whip to kill the snake with. I had scarcely returned when he gave it a kick with his naked foot, and the horrible reptile bit him. Coolly taking out some dried poison sacs he reduced them to powder, pricked his feet near the puncture with his knife, and rubbed the virus powder in just as he had done with the cattle. In the meantime I had put a stop to the snake biting any more by a blow from the whip stock, and the bushman extracted the fangs, drank a drop of poison from the virus sack, and soon fell into a stupor which lasted some hours. At first the swelling increased rapidly, but after a time it began to subside, and next morning he inoculated himself again. That night the swelling disappeared, and in four days he was as well as ever."

In conclusion it may be mentioned that this record of experimental inquiry is not intended as an exhaustive treatise, for as opportunity occurs other experiments will be tried with such supposed remedies for snake bite as may be offered, and the results will be duly published. In conducting the experiments the writer has been influenced by the motives only of adding to the sum of human knowledge and alleviating human misery, and if he has succeeded in this he will be amply repaid for the labor and dangers incident to the research. His thanks are offered to several persons who have aided him, more especially to his industrious and energetic assistant Mr. E. B. Rheem and to Capt. Bendire, U. S. A. It is proper to add that the greater part of the expenses of the investigation have been borne by the National Museum.

(*Concluded.*)

REPORTS OF CASES.

EXPERIMENTS WITH ESERINE.

By R. T. Whittlesey, D.V.S., Los Angeles, Cal.

Case 1, ch. g.—Gave one gr. hypodermically; got increased murmur, but no passage of flatus or fæces at all.

Case 2, br. g.—Been colicy for several hours before I saw it at 5 p.m., and gave aloes ball and 2½ gr. morphia hyp. Pain ceased. Called again at 9.30. Had been in pain for about an hour; gave 1 gr. ezerina. Showed only a little pain after the injection; some escape of flatus: in 30 minutes very marked peristaltic movement. Watched the case an hour but no passage of fæces.

Case 3, g. g.—Colic from change of feed to wheat straw chopped with ground feed. At 10 a.m. gave aloes ball and 5 gr. morphia. At 5 p.m. another 5 gr. morphia hypodermically. At 10.30 p.m. another 5 gr. morphia. The pain would cease after each of these for several hours. At 6 a.m. administered 1 gr. eserine hypodermically; watched it an hour; no effect except that there was little or no pain. 10a.m., he was still having pain at times; gave 1 gr. eserine freshly dissolved; in fifteen minutes pain increased, and in just forty minutes there was a small evacuation, soon followed by another, and in the next thirty minutes there was eight evacuations, the last very watery.

This last dose of eserine was freshly dissolved; the others I am satisfied had been dissolved for several weeks.

Case 4, b. g.—Had been overfed on ground barley in the morning. Saw him at 5 p.m.; gave 5 gr. morphia and an aloes ball; was quiet most of the time until 10 p.m., when I gave another 5 gr. morphia, but did not get the desired effect as the pain continued unabated, and at 11 P.M. I gave 1 gr. eserine and 2½ grs. pilocarpine in one drachm of water; commenced to froth at the mouth in ten minutes, flatus was passed in fourteen minutes, and very frequently afterward, great trembling of the limbs but no perspiration of any consequence; first evacuation in 27 minutes, great pain just before its appearence, and pain at intervals afterward for an hour, but only one other passage and I watched him for an hour and a half. He then quieted down and I left him for the night. The two passages were soft and covered with mucus. Next morning I found the floor tramped down hard where he had walked in a circle, but no sign of any fæces. For the greater part of the day he continued to walk around the corrall with his mouth partly filled with hay, or stand at the water trough. I gave no more medicine, as his pulse was full and strong and he had no extreme pain. At 5 P.M. he had a passage covered with mucus, next day he was scouring freely. In this case I think the morphine prevented the full effect of the eserine and pilocarpine.

CASE 5, b. g.—Colic from wheat straw chopped with barley. At 3 P.M. gave 5 gr. morphia and an aloes ball. Pain ceased until about 1 A.M., when I was called and gave 1 gr. eserine and 1¼ pilocarpine. The salivation was slight, first evacuation in 25 minutes, and five more within the hour, the last ones very soft; the aloes worked all right the next afternoon.

CASE 6, sl. g.—Colic from over-feed of barley. Gave 5 gr. morphia and an aloes ball, some flatulence and I used the trocar; gave morphia from time to time to keep down the pain for twenty-six hours; there then being no action from the aloes, I gave 1 gr. ezerina; first evacuation in 16 minutes, no more for an hour; he lay down most of the time; in about an hour he got up and had six passages in fifteen minutes and they continued through the night, less frequently however.

CASE 7, g. g.—Traumatic tetanus. I had given two ounces of aloes per rectum without any effect; gave ¾ gr. eserine; it caused a considerable amount of uneasiness for about five hours without causing an evacuation of the bowels.

CASE 8, g. g.—Been overfed on chopped barley, hay and grain; sick for several hours before I saw him, and was in great pain.

Gave 5 gr. morphia but had no aloes ball at hand. He stopped rolling but kept pawing and walking in a circle. At the end of an hour I gave 1½ gr. eserine; in about fifty minutes he passed a quantity of dry, powdery fæces, at the end of two and one half hours he had passed nothing more and was still in pain; gave ¾ gr. eserine and 1¼ gr. pilocarpine; in thirty minutes he had a passage of fæces and seemed much easier; so I left him for the balance of the night. Next morning he was having slight but constant pain; gave a large aloes ball, and about middle of the forenoon I gave 1 gr. eserine and 2½ gr. pilocarpine, which caused quite a large passage in forty minutes and another in about sixty minutes; an hour after I gave a warm water enema, which brought away a large amount of fæces. The horse eased down after this and I waited for the aloes to act but he died thirty-six hours after without any action, although he was in no apparent pain and the pulse was reasonably strong and soft up to the second night after, when we left him, to find him dead in the morning. Had no opportunity for a post-mortem.

Case 9, g. colt 16 mo.—Impaction from alfalfa. For the benefit of vets. who are not used to alfalfa I will explain that it somewhat resembles clover as a feed, and animals eating it are generally very loose, but if they do get impacted it is almost always fatal, as the fibers form a mass of about the consistency and digestability of a hard pressed ball of wet oakum. The colt had had one pint of linseed oil the night before I saw it; gave ¾ gr. eserine; no evacuation, some pain; lay down and could not get up. This was in the forenoon. Saw it again at 1.30 P.M., gave 1 eserine and 1¼ grs. pilocarpine; caused profuse salivation and muscular twichings; two or three hard pellets came away. In one and one-half hours gave ½ gr. eserine; no evacuations; a little flatus was passed; paristaltic murmur very loud at times. 7 P.M. was down and unable to rise; gave 1½ gr. eserine, made an examination per rectum; found it empty but could feel the impaction in the colon; it was very large and would dent with pressure. The eserine caused great pain for an hour, then he lay very quiet; we dragged him into a box stall as he was unable to rise, and he died about 10 P.M. I have no doubt that the eserine hastened death, without having the desired effect, as the doses were enormous for a 16 mo. colt.

CASE 10, grm.—Had azutoria, a relapsed case, having been turned loose to play next day after a light attack. Gave one oz. of aloes with gentian; it failed to act in due time and I gave 1½ gr. eserine; the rectum was emptied in thirty minutes and one small passage a few minutes later was all. She died the following night.

CASES 11 and 12.—Two colts, one a yearling, the other a 3 yr. old, had been turned from alfalfa into dry corn stalks and wads. When I saw them the youngest had been showing pain three days, the other two, the owner said "go for them, I think they will die anyway." I administered 1½ grains eserine and 1¼ grains pilocarpine to the youngest and he died in just thirty-two minutes with tetanic convulsions; he stood up and tried to walk until the last, although he had lost all power of co-ordination in fifteen minutes, and reeled, crossed his legs and staggered like a drunken man. I made an autopsy immediately and found an impaction in the small intestine about nine inches long. It slipped along the intestine very easily, which I think a result of the action of pilocarpine. There was no evacuation before or at death.

I gave the other colt the same dose. It caused a great deal of uneasiness and straining, but no fæces made an appearance in one and a half hours, although pain was less at the end of that time. I gave an aloes ball and left 1 grain eserine to be given in the morning and went home; it died the next afternoon without having had any movement of the bowels at all.

CASE 13, g. g.—Had colic all day; pain not very great, but constant. Morphia did not have much effect; gave 1 grain eserine with no results except that the pain seemed to cease. He was all right next day. I have used eserine in a number of other instances but with results similar to those described.

In one instance I gave what was supposed to be 3 grains dissolved in a few ounces of water, as a drench, with no visible effect. While it cannot be relied upon to always have the desired effect, I consider it a wonderful remedy and worthy of trial in any case of obstinate constipation. My experience has been, however, that as a remedy in the first stages of the attack it is worthless, and even if it does cause an evacuation of fæces, there must be a physicking out from some cathartic remedy before the animal will get well.

And I have failed in every instance where I was satisfied there was an impacted lump in the gut, as in Case 11, where the lump was so solid that I kicked it clear across the corral without breaking it in pieces. I have had as good results with eserine alone as combined with pilocarpine; still I think that in some protracted cases pilocarpine will have a tendency to ward off enteritis. I think eserine will be found to act the best administered about twenty hours after a big physic ball, when it has failed to operate.

EXTRACTS FROM FOREIGN JOURNALS.

TŒNIA IN THE ŒSOPHAGUS AND KIDNEYS OF A DOG—RABID SYMPTOMS.

By M. Wolpert.

For some time previous the patient had been affected with fits of a peculiar epileptic character, and had now for two days kept up a persistent howling, and refused his food. The case presented the following aspect: staring eyes; pendant mouth, with an abundant discharge of foamy and yellowish saliva; mucous membrane black and coated; tongue hanging out and swollen, and great thirst, with inability to swallow. While these symptoms might suggest the existence of rabis, many of the signs precluded such a diagnosis. The examination of the throat or of the œsophagus failed to reveal the presence of foreign bodies. The presence of other dogs caused no excitement.

A large dose of castor oil was given, and was followed by a good purgation, but without any improvement in the symptoms. The dog was then destroyed. The post mortem brought to light a large tœnia serrata, which was found attached in the œsophagus, some segments also existing in the stomach. The small intestines also contained a large number existing in the shape of balls. The kidneys and gall bladder were very large, the latter being distended by a large quantity of bile. Both kidneys contained tœnia in their pelves, the nudullary substance of the organ being entirely destroyed.—(*Revue Veterin*)

ENORMOUS FIBROMA AND INVAGINATION OF THE FLOATING COLON IN A STEER.

By G. Furlanetto.

This animal, which had been recently bought, had been in perfect health since his purchase, and about two weeks later had been put to work in the field, when he manifested great difficulty in defecation, straining violently. This effort produced a discharge of blood, almost pure and increasing in quantity with each expelling effort. When visited by Dr. Furlanetto the anus, perineum, and the tail, with the internal face of the hind legs, were covered with fresh blood. The pulse was accelerated and weak, and the cutaneous temperature lowered. At the anus a tumor appeared, about the size of a base ball, of a brownish color, rough externally, bloody and imperforate. The introduction of the hand into the rectum caused the return of the tumor into the pelvis, or from thence into the abdominal cavity, where it dropped, and could only be felt with the ends of the fingers, by pushing the whole arm deeply into the rectum. The animal having been destroyed for the butcher, was examined, and on opening the abdomen, the trouble was found to be due to an invagination of the floating colon. The rectum was greatly distended by a large polypus, 40 centimeters in length, and 16 in its widest part. This growth had a long peduncle, attached to the terminal end of the colon, and was easily displaced backward, even to the anus, and had given rise to the invaginations. Its structure proved to be that of a single fibroma.—*Rec. Clin. Med. and Chir., Trevise degli Animaux Domestiques.*

SPONTANEOUS RUPTURE OF THE PRIMITIVE AORTA—SUDDEN DEATH.

By the Same.

First Case.—This was an aged animal which had been driven about half a mile, at a fast gait, and when turning round to go back was suddenly taken with violent trembling and staggering, and fell and died. At the opening of the thoracic cavity the pericardium was found to be enormously distended by several quarts of coagulated blood, which had come from the primitive aorta, in which a laceration appeared about two inches long, near the origin of the left coronary. The walls of the artery seemed to be thinner than in the remainder of its course, where it appeared normal.

Second Case.—A mare drawing a light vehicle was subjected to about the same kind of effort, and, in returning, underwent a similar experience of symptoms, and dropped dead.

The pericardium presented the same condition as in the other case, and was filled with coagulated blood. The aorta was also ruptured, the lesion having taken place at the origin of the vessel, near the right coronary. The rupture was horizontal, and measured a little less than two inches. The edges of the wound on the inside were regularly torn, and smooth, while on the outside they were ragged and projecting. The walls of the aorta seemed otherwise healthy.—*Ibid.*

A CASE OF PALPITATION OF THE AORTA.

By the Same.*

An old mare, sick for thirty hours, presented the following symptoms: Dull expression, eyes closed, extremities cold and violent jerks and beatings back of the left flank, so strong that when they occurred the whole body was shaken. They were observable at a distance, and increased with every movement of the animal. On auscultation the seat of the motion was observable on a level with the false ribs, a little below the vertebral column. By placing the hand over the cardial region, the beating of the heart could be felt in its normal strength, and the jerks or convulsive contractions were found to be synchronous with the pulsations of the glosso facial. The animal refused all food, both solid and liquid. The temperature and pulse were normal, but respiration was somewhat accelerated. Defecation was also normal. The treatment included an electuary of digitalis, with nitrate of potash and emetics. On the third day, the spasms became more violent, when a dose of sulphate of magnesia in an infusion of chamomile was given, which was followed by relief, and a complete recovery in about ten hours.—*Ibid.*

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* This is a case of diaphragmatic chorea—spasms of the diaphragm or stumps.

A CASE OF SCIATICA IN THE HORSE.

By the Same.

The patient in this case became lame in the left posterior leg, which, increasing, by degrees, had become intense. The animal stepped only on his toe while walking, and when at rest his leg was held up all the time. Nothing appeared in the foot, and there were no visible external lesions. Pressure on the leg along the course of the sciatic nerve and its branches evidently caused great pain, and hard pressure on the front of the metatarsus produced suffering so intense that the animal let himself drop.

The suffering became overpowering when the hip, the stifle and the tendon achilles were pressed upon. The appetite was lost, pulse acclerated, temperature normal; the lameness was slightly mitigated by exercise. The treatment was by friction of belladonna ointment, three times a day, over the painful, nervous spots, with bromide of potash internally, which was followed by an improvement which enabled the animal to take exercise. But a subsequent relapse occurred with an apparent aggravation of the pain and an excessive development of all the symptoms. The treatment was then changed to frictions of oil of belladonna internally, electuaries of the same drug, and the result was favorable. The animal was able to resume his work in a month, and since then has had no return of the malady.—*Ibid.*

ARTHRALGIA OF COWS RECENTLY DELIVERED.

By Prof. Dessart.

Under this name the author describes a rheumatismal affection of milch cows, which he had observed, and which had affected eight animals out of a herd of eighty-two. In the history of the affection it is stated that all the cows had been safely delivered, but that after a few days the affected animals began to walk with an arched back and knuckling at the fetlocks, though showing at first no excessive flexibility of the back or loins, but on the contrary at a later period, stiffening into an intense rigidity. After a few days, the animal would bring her legs together as if affected with laminitis of the fore feet, those which were more affected getting up with difficulty, and with a peculiar movement, first elevating the hind quarter, and remaining in that partly upright posture for a period varying from a few minutes to half an hour, before completing the rising movement. The gait in walking was hesitating and staggering, and at times a cracking of the joints was heard, while some one or other of the muscular masses became the seat of tremblings or spasmodic contractions. The animal was more or less lame, and there was a peculiar stiffness of one or more of the extremities; none of the great functions seemed to be disturbed; none of the animals died. The treatment was preventive and curative. The first consisted in warm woollen blankets immediately after delivery, with thick, clean bedding and warm drinks, and protection from exposure. The second, with the same hygiene, included cod liver oil, 250 grammes, (about 8 ounces) a day in two doses, and stimulating frictions over all the joints of the extremities.—*Annales de Bruxelles.*

CONTRIBUTION TO THE STUDY OF ANEURISMAL TUMORS.

By Mr. Ed. Godfrin.

This is the record of the fatal termination of two cases of aneurisms of the posterior aorta in two colts, one two and a half years old, the other eighteen months. The diagnosis was made during life by rectal examination, which enabled the author to detect in each of the cases an indolent tumor, about the size of a man's fist, situated in the sub-lumbar region, in front of the right kidney. In both cases the pulsation was readily detected. An unfavorable prognosis was confirmed by the sudden death of both animals, which took place a few days afterwards. At the post-mortem the abdomen was found to be filled by a large bloody collusion, due to the rupture of the aortic aneurism.—*Ibid.*

CHRONIC TYMPANITIS, RESULTING FROM HYPERTROPHY OF THE PECTORAL LYMPHATIC GLANDS.

By M. J. Darieux.

This is the record of a cow which was suddenly attacked with tympanitis after her morning meal. The first attack was relieved by puncture of the rumen with a fine trocar and the administration of 400 grammes of sulphate of soda given in three doses. The animal had already had an ounce of ether in a pint of alcoholic mixture. She did well for a few days, during which she calved, her delivery being accomplished without difficulty. She was, however, again attacked in the same manner, and was again relieved by low diet with doses of nux vomica. This giving but little relief, a resort to permanent rumenotomy became necessary, the canula of the trocar being left in place for six days. Still the relief was only temporary, and the general condition of the patient began to suffer. Rumination became irregular, the appetite diminished, and the milk was reduced in quantity, and still the most careful and repeated examinations of the patient failed to develop any indications of disease sufficient to explain the difficulty. The animal was ultimately destroyed. An abscess was found in the abdomen at the point of the punctures previously made with the trochar. All the abdominal organs were healthy except a lymphatic gland of the liver, which had become much enlarged. In the chest the pectoral ganglions were very large, two of them especially which surround the œspohagus and trachea. The bronchial and mediastinal glands also were hypertrophied, and a section of these showed them to be the seat of calcareous deposits. None of them contained pus. The lungs present contained about twenty tuberculous deposits of various size.—*Ibid.*

SOCIETY MEETINGS.

NEW JERSEY STATE VETERINARY SOCIETY.

The New Jersey State Veterinary Society held its regular meeting at the Hamilton House, Paterson, New Jersey, on Thursday, February 7th, 1889, at 2 P. M.

The minutes of the previous meeting were adopted as read.

The Treasurer's report was also accepted.

Dr. A. T. Sellers, of Camden, a graduate of the American Veterinary College, was proposed for membership of the Society, and it was referred to the Board of Censors, who will report at the next meeting.

The Secretary read Senate Bill No. 12, to regulate the practice of veterinary medicine and surgery, which is now before the Legislature; a very lively discussion followed, after which the members present approved the bill. Dr. Lowe thought that the proposed bill could be enacted as a law if the veterinarians would unite to concerted action.

The delegates appointed to attend the meeting of the Alumni of the American Veterinary College are as follows: Dr. J. C. Corlies, Dr. W. H. Lowe, Dr. A. H. McIntosh, Dr. J. F. Autenrieth and Dr. C. Kuehne.

The paper read by Dr. J. F. Autenrieth on "The Operation of Tenotomy, its application in Sprung Knee and Knuckling," was a very able one and brought forth some very interesting facts; the author spoke highly of the operation in these diseases, and the discussion following was very instructive.

Dr. W. H. Lowe made a motion to make an amendment to the Constitution (Article V) which reads: "There shall be four regular meetings of this Association every year; one in August; one in November; one in February, and one in May. Each meeting shall be held on the first Thursday of the respective months, with a banquet once a year at the annual meeting in Angust," to have but two meetings each year, the annual meeting to be held the first Thursday in August, and the regular meeting to be held on the first Thursday in February. The matter was submitted to the Board of Trustees, who will report at the next meeting.

It was decided to hold the next meeting in Newark on Thursday, May 2d, at 2:30 P. M., and the Board of Trustees to meet at 2 P. M.

The meeting then adjourned.

CHARLES KUEHNE, Ph. G., D.V.S., *Secretary.*

MASSACHUSETTS VETERINARY ASSOCIATION.

At the regular meeting of this Association, held at the rooms of the Boston Medical Library Association, December 26th, 1888, the President, Dr. J. F. Winchester presided, and there were present Doctors Blackwood, Bryden, Stickney and Howard of Boston, Marshall of Brookline, Osgood of Springfield, Simpson of Charlestown and Pierce of 5th Cavalry, Fort Reno, Indian Territory.

After reading the minutes of the previous meeting and the transaction of some minor business, Dr. J. F. Winchester read a paper on Tuberculosis. (*).

At the conclusion of the paper Dr. Winchester said that the particular point he had endeavored to make was, that tuberculosis is a contagious disease and in his opinion *tubercular phthisis is more contagious than contagious pleuro-pneumonia in cows, or glanders in horses*, and that this point had been fully demonstrated by the many cases he had detailed, where an affected herd had been entirely destroyed, the barn disinfected and empty for a year, and when a new herd, free from disease, had been brought in, tuberculosis was again set up.

(*) This paper is published among the original articles of this issue.—Ed.

Dr. Bryden said there was no question now about the influence of heredity or contagion in this disease, and the important question is, at what stage is the animal unfit for sustenance by the flesh or milk?

Dr. Winchester said the Paris congress had shown that it was possible to reproduce the disease from *any* stage.

Dr. Osgood detailed an experience in the western part of the State, where a whole herd was destroyed affected with this disease. The stables remained empty for more than a year, at the end of which time six Jerseys were brought into them directly from Europe, having been thoroughly examined before shipment by a competent man. Tuberculosis was again set up, and the whole herd was finally destroyed. Dr. Osgood said further, that he believed that with this disease, as with glanders in horses, the only way to get rid of it was to burn the buildings in which it had been in addition to destroying the animals.

Dr. Winchester said that one thing about this germ, it requires a certain temperature for development, and we do not know in how low a temperature it will retain its activity, and whether or not freezing will destroy it.

Dr. Stickney said the magnitude of this disease is not astonishing when we consider that we have been importing it for thirty-five years. We have developed by breeding the desirable qualities of the animals and why not this disease, as vices are more often reproduced than virtues.

Dr. Osgood said that when the public comes to recognize this disease as contagious, we may then have a law to aid us in controlling it or getting rid of it.

Dr. Bryden raised the question, whether or not exposure alone would produce this disease.

Dr. Winchester said, that we must have the *germ* from somewhere; privation or exposure *alone* would not produce it. He related that in a section of a certain town in his vicinity, most all of the deaths of people were at about twenty years of age from consumption. The people live huddled together, no ventilation or other sanitary conditions present, but the disease is produced by contagion; it is in those houses.

Dr. Bryden said he thought excess of nutrition might be a predisposing cause also, and one reared in luxury be very likely to contract the disease.

Dr. Winchester said that in regard to the *condition* of animals in which it is present, he had seen as handsome an animal as could be found in Brighton, taken home, killed, and found to be rotten with tuberculosis. In loss of lung substance we often have an increase of fat, that is, up to a certain point, and then they will go down the scale very fast. Another fact in regard to this disease is, that where it is prevalent we generally find that the animals are kept for a certain purpose, and *pushed* for it, and are often found confined in low studded stables. This disease will lie latent for generations also, and then crop out.

At the conclusion of the discussion, a unanimous vote of thanks was tendered the essayist, Dr. Winchester. It was also unanimously voted that the Association request Dr. Winchester to read this paper at the meeting of the United States Veterinary Medical Association to be held in March.

Application for membership was received from Myron Chapin, D.V.S., of Springfield.

L. H. Howard, *Secretary.*

ILLINOIS STATE VETERINARY MEDICAL ASSOCIATION.

The sixth semi-annual meeting of this Association was to take place on the 8th of February at Springfield. All veterinarians, whether members of the Association or not, were cordially invited. The programme involved the reading and discussion of the following papers: "Tetanus," by F. Booker; "The Veterinary Profession in its relation to Agriculture," by Prof. G. E. Morrow; "Strangulated Umbilical Hernia," by J. Scott; "Report of Cases of Lacerated Wounds," by W. A. Baker; "Septiæmia after Castration," by T. B. Newby; "Malaria in Horses," by J. T. Pease; "Arthritis in Foals," by J. F. Reid

OHIO STATE VETERINARY MEDICAL ASSOCIATION.

The Ohio State Veterinary Medical Association held its sixth annual meeting in the G. A. R. Hall, Columbus, January 15th, 1888.

President Dr. J. S. Butler called the meeting to order at 2 o'clock P. M.

Roll call, twenty members responded.

Minutes read and accepted.

The President, addressing the members present, gave an able review of the past and present condition of the Association, making many valuable suggestions in regard to its future progress. A vote of thanks was tendered Dr. Butler for the able way in which he had fulfilled the duties of his office during the year.

The officers for the ensuing year were elected as follows: President—Dr. T. B. Hillock, Columbus; First Vice-President—Dr. D. P. Yonkerman, Cleveland; Second Vice-President—Dr. Labrow, Xenia; Third Vice-President, Dr. Charlesworth, Springfield; Secretary—Dr. W. J. Torrance, Cleveland; Treasurer—Dr. W. R. Howe, Dayton.

Board of Censors—Drs. G. W. Butler, Circleville; J. D. Fair, Berlin, and E. H. Shepard, Cleveland.

Letters were read from Profs. Smith, Toronto, and Liautard, New York, and Dr. W. G. Williams, of Bloomington, Ills., regretting their inability to attend the meeting, and expressing their good wishes for its future prosperity.

The Corresponding Secretary also read the "Cowgill" bill to regulate veterinary practice now before the Ohio Senate. No definite action was taken in regard to the bill.

Dr. Newton, Toledo, read an interesting paper on "Lameness," particularly that of the "coffin joint." He strongly advocated "low neurotomy" as a surgical treatment, and cited in detail recorded notes of many cases where he had thus operated.

A long discussion npon the merits of cocaine in this and other operations followed, in which Drs. Torrance, Howe, Hillock, Butler and others took part.

Dr. W. P. Yonkerman advocated "nerve stretching" in many cases as a substitute for neurotomy.

Drs. Howe and Shaw described the veterinary operating tables at present in use, and spoke favorably of their use.

Dr. Shaw, Dayton, reported a highly interesting case of "Fistula of the Withers," secondary to "Irregular Strangles."

Treasurer Newton read the annual report, showing a healthful surplus in the treasury.

A motion was carried giving the Secretary a yearly remuneration of $20 for his services to the Association.

Dr. Torrance exhibited a specimen of hair and epithelium taken from a horse affected with a peculiar "exfoliating dermatitis," which he claimed was prevalent in certain pastures south of Cleveland. He had failed to find a parasitic causation for the malady, and had evidence to attribute it to acrid plants upon woody pastures.

Dr. D. P. Yonkerman exhibited an improved method of hypodermic medication with tablets of the alkaloids. His system received the highest commendation, and the thanks of the meeting were tendered the doctor for his contribution to the veterinary profession.

The meeting adjourned to reassemble in the evening.

The meeting reassembled for an evening session at 7 P. M. The President for the ensuing year, Dr. Hillock, took the chair and addressed the meeting.

Dr. J. S. Butler reported a critical and long-lasting case of "Impacted Colon" in a two-year-old colt, and in which the tympanitis required in all thirteen repetitions of "paracentesis abdominalis," and in which the recovery was decisive and perfect in all respects. The merits and effects of the trochar and canula, and also of the use of eserine in this and other affections were discussed by Drs. Colton, J. S. Butler, Shaw, Yonkerman, G. W. Bullar, Fair, Torrance, Meyer, Hillock, Lee and others at considerable length. The discussion elicited much new and interesting information.

Dr. Howe, of Dayton, then read an able and original paper on "Eserine," based on a varied and extensive usage of the drug. An instructive discussion followed.

A discussion of "Azoturia" followed, in which Drs. Lee, Taylor, Newton, Torrance and others took part.

Dr. Yonkerman preferred charges of "Breach of Etiquette" against Dr. Shaw, of Dayton. An inflammable controversy upon free doctoring insurance companies followed. The charges were referred to the Board of Censors.

Judge Jones, of the Ohio State Board of Live Stock Commissioners, made some complimentary remarks upon the standing of the veterinary profession in Ohio and the United States generally.

Drs. J. S. Butler, Meyers and Newton were appointed a committee to draft resolutions of condolence to be forwarded to the widow of the deceased Dr. A. S. Smith, of Pleasant Hill, Ohio.

Drs. Colton, Newton, Charlesworth and others spoke on veterinary legislation. While Dr. Newton referred to the dehorning of cattle—which he advocated—in which he was opposed by Dr. Colton.

The President appointed the following committees: Committee on Veterinary Progress—Drs. J. C. Meyer, Jno. Fair and Colton. Committee on Animal Diseases—Drs. Yonkerman, Shaw and Newton.

It was decided that the next semi-annual meeting should be held at Delaware, Ohio.

The following gentlemen were selected to read papers: Drs. White, G. W. Butler, Charlesworth and Derr.

W. J. TORRANCE, V. S. *Sec'y.*

SANITARY EXTRACTS.

GLANDERS IN MAINE.—From the reports of the Commissioners on Contagious Diseases of Animals in the State of Maine, it appears that glanders and farcy have been increasingly prevalent during the year 1888, and that the matter has been considered sufficiently serious to attract official notice, and to justify the establishment of a special prohibitory quarantine.

The following order explains the condition of things:

"Public notice is hereby given that in consequence of the prevalence of glanders and farcy among the Texas mustangs, or broncho horses, brought into Maine and sold to the number of 2,900 during the season of 1887, no more broncos will be allowed to be landed or exposed for sale in the State until further notice."

The same report states also the interesting fact that only three cases of tuberculosis have developed during the year, out of the whole number inspected.

The report further says that glanders does not prevail among horses in the State, and intimates a strong probability that the cases which have been developed among them are the result of inoculation from horses brought into the commonwealth from abroad.

A few cases of abortion in cattle are also reported.

GLANDERS AND FARCY IN MINNESOTA.—From the Public Health Report of the State Board of Health, for November and December, we extract the following table:

DISEASES OF ANIMALS FOR SEPTEMBER.

Cases of glanders remaining isolated or not accounted for	29
Reported during the month	17
Killed	10
Released	3
Isolated	9
Remaining October 1st isolated or not accounted for	35

NOTE.—Most of these are cases exposed, and isolated for further observation.

DISEASES OF ANIMALS FOR NOVEMBER AND DECEMBER.

Cases of glanders remaining isolated or not accounted for	31
Reported during the months	8
Killed	10
Released	14
Isolated	4
Remaining January 1st, 1889, isolated or not accounted for	15

NOTE.—Most of these are cases exposed, and isolated for further observation.

CATTLE DISEASES IN CANADA.—Under date of December 31, we have official assurances from the inspector of stock of the Dominion, that there are no such diseases in the Dominion, and none have occurred recently except "a few slight local outbreaks of anthrax, which have been promptly stamped out."

GLANDERS IN MISSOURI.—From the last report received from the State Veterinarian, Dr. P. Paquin, we extract the following appendix relating to glanders:

NUMBER OF CASES OF GLANDERS.

In the neighborhood of Breckenridge, Mo	2 cases
" " " Rothville, Mo	2 "
" " " East Leavenworth, Mo	1 case
" " " Jamesport, Mo	1 "
" " " Trenton, Mo	1 "
" " " Carthage, Mo	1 "
" " " Chain of Rocks, Mo	2 cases.
" " " Jackson, Mo	2 "
" " " Glasgow, Mo	1 case.
Total	13 cases.

Number of miles travelled (approximately) 3,500.

The treatment of all those cases consisted in either legal quarantine or slaughter. So protection was complete in every instance. However, some thirteen deaths had occurred all told before State service could be secured or was demanded. Material for experiments was gathered and is being used in the study of glanders.

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Edited and Published by

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Editorial.—The title page of our eleventh volume—error by the printer—our correction, and new title page—list of contributors to that volume—our thanks to those pioneers of American veterinary literature—efforts to render the Review accessible to all—our future prospects—the Review, born of the United States Veterinary Medical Association, has always paid its relative its respect—at times severe, but always just—the meetings in New York, Boston, Philadelphia and Baltimore—the last one probably the most useful and interesting of all—paper from Dr. Salmon on hog cholera—his claim—discovery of distinct diseases—European observation and discoveries coincide with the investigations made in America—Dr. Clement's handsome exhibition of specimens of pleuro-pneumonia lesions—their specific value at the various stages of the disease—paper on mediate contagion—Dr. Salmon's remarks—Prof. Law's answer to Dr. Gadsden—our suggestion on the subject seconded. Director Nocard's request—the fifth international veterinary congress to be held in September, 1889—the congress on tuberculosis to take place this year, in July—our confreres on this continent can become members and receive the publications of both by a small remittance to the treasurer of both. Two new veterinary journals, the *Ercolani* and the *Giornale di Veterinaire Militare*...................... 1–6

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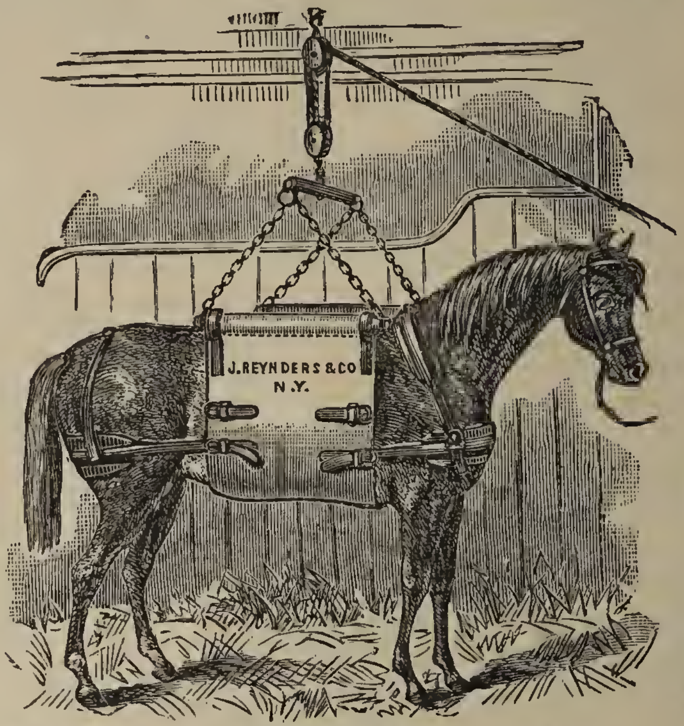

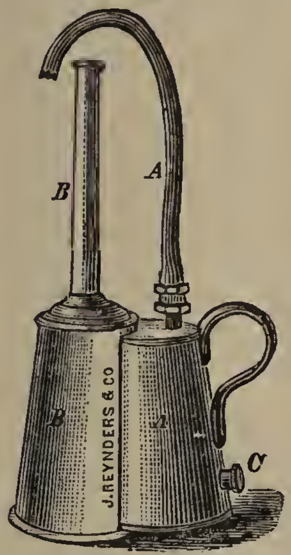

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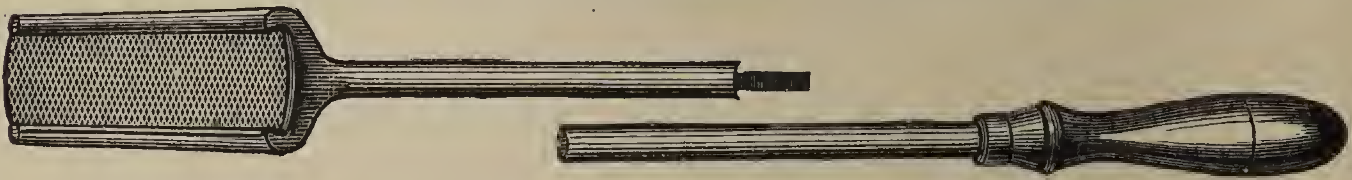

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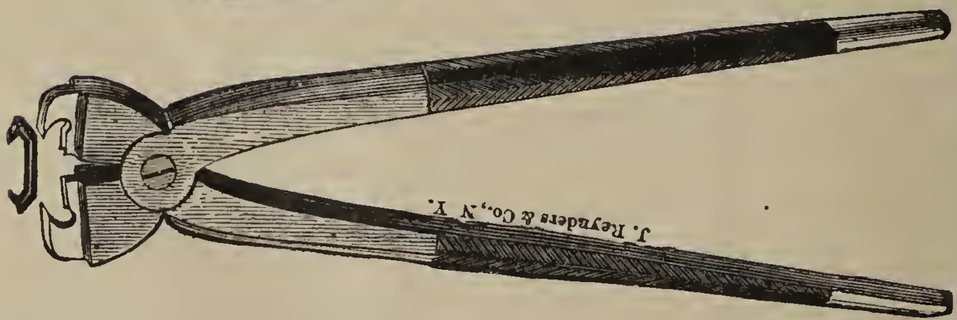
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